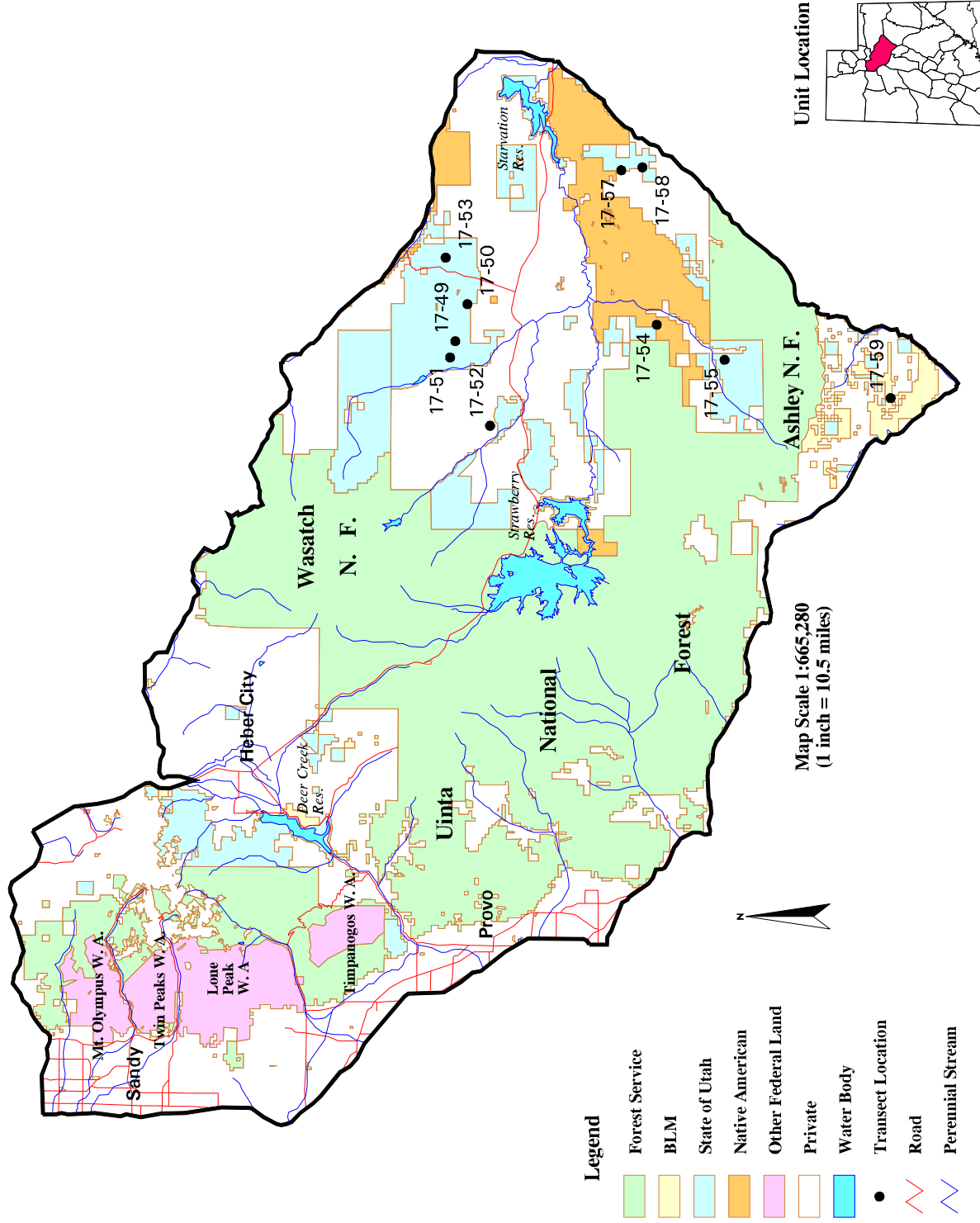


Management Unit 17



WILDLIFE MANAGEMENT UNIT 17 (13 & 14) - WASATCH MOUNTAINS

Boundary Description

Salt Lake, Summit, Wasatch, Duchesne, Carbon, Utah counties - Boundary begins at the junction of Interstate 15 and Interstate 80 in Salt Lake City, then east on I-80 to Highway US-40; south on US-40 to Highway SR-32; east on SR-32 to Highway SR-35; southeast on SR-35 to Highway SR-87; south on SR-87 to Duchesne and Highway US-191; south on US-191 to Highway US-6; northeast on US-6 to I-15; north on I-15 to I-80 in Salt Lake City.

Old deer herd units 13 - Currant Creek and 14 - Avintaquin are now contained with the large Wasatch Mountains Wildlife Management Unit 17. The old deer herd unit boundary descriptions and unit descriptions have been retained below. Old trend study numbers are found in parentheses next to the new unit 17 study numbers on the discussion page for each trend study.

OLD DEER HERD UNIT 13 - CURRANT CREEK

Boundary Description

Duchesne and Wasatch counties - Boundary begins at Duchesne; then north on Highway SR-87 to Highway SR-35; northwesterly on SR-35 to Wolf Creek Pass and the Provo River-Duchesne River drainage divide; south along this drainage divide to Heber Mountain and the Strawberry River-Daniels Canyon drainage divide; south along this divide to Highway US-40; east on US-40 to the Soldier creek Dam road; south on this road to the Strawberry River; east along this river to Duchesne and the beginning point.

Unit Description

The Currant Creek portion of unit 17 encompasses an area of almost 320,000 acres. Winter range is estimated to be 117,500 acres, with the majority (84%) being divided almost equally between state and private lands. The summer range is a little over 200,000 acres, with 62% of it being on U.S. Forest Service lands. The remainder of the summer range is divided between state (25%) and private lands (13%).

Winter range is the critical habitat factor on this unit. All trend studies sample winter range sites. The winter range extends in a virtually solid block north from the Strawberry River to a maximum elevation of about 8,000 to 8,700 feet in the Duchesne River, Red Creek and Currant Creek drainages. At lower elevations, vegetation is primarily pinyon-juniper. At higher elevations, sagebrush-grass and mountain brush communities are more prevalent. See Huff and Coles (1966) and Olsen (1975) for a more complete description.

Management Objectives

The current objective for the Currant Creek portion of unit 17 is to achieve a target winter herd size of 12,000 deer and 1,200 elk. A herd composition of 15 bucks to 100 does will be maintained, with 30% of the bucks being 3-point or better. The desired herd composition for elk is to attain a bull to cow ratio of 8 bulls to 100 cows with 4 of the bulls being 2 ½ years of age or older.

Trend Study Description

Six trend studies were established in 1982 and reread in 1988, 1995 and 2000. These include: Blacktail Ridge (17-1), Grey Wolf Mountain (17-2), Lower Santaquin Draw (17-3), Santaquins Cabin (17-4), Cutoff (17-5) and Two Bar Ranch (17-6). The road to the Blacktail Ridge was impassible to trucks in 2000 so the site was not reread.

OLD DEER HERD UNIT - 14 - AVINTAQUIN

Boundary Description

Duchesne, Utah and Wasatch counties - Boundary begins at Duchesne and Highway US-191; then southerly on US-191 to the Reservation Ridge road; westerly and northerly on this road to Big Beaver Springs road; northerly on this road to Big Beaver Springs and Beaver Canyon; northeasterly along this canyon to the Strawberry River; easterly along this river to Duchesne and beginning point (excluding all Ute Tribal lands within this boundary).

Unit Description

The Avintaquin portion of unit 17 contains approximately 97,361 acres of summer range, 96% of which is administered by the Forest Service (Evans 1995). The other 4% is privately owned. Winter range acreage totals about 141,513 acres, where 47% is on Ute Tribal lands and 26% is on private lands. The State of Utah administers an additional 18%.

The principal limiting factor on this portion of the unit is mostly the condition and productivity of the winter range. Winter range extends as high as 8,500 feet in elevation during severe winters. The canyon bottoms of the Strawberry River and its tributaries are very important. The dominant vegetative type on the winter range is pinyon-juniper woodland. There are other areas smaller in size that also play an important role for usefulness as winter range. Most notably, they are pinyon-juniper chainings and sagebrush-grass areas. See Coles and Pederson (1967) and Giunta (1979) for a more detailed description of habitat.

Unit Management Objectives

The current big game management objectives for the Avintaquin portion of unit 17 are to achieve target winter deer and elk herd sizes of 3,000 and 1,000 animals respectively. The herd composition for deer is to maintain a buck to doe ratio of 15:100 with 30% of the bucks being 3-point or better. The elk herd composition objective is to achieve a minimum bull to cow ratio of 8:100 with at least 4 of those bulls being 2 ½ years of age or older.

Trend Study Description

On the Avintaquin portion of unit 17, three range trend studies were established on DWR land 1 on private land and 1 on the Uintah and Ouray Indian Reservation. There is little federally-owned winter range and the majority remains under private ownership or on the Indian Reservation. All study sites sample deer winter range. Two sites sample pinyon-juniper chainings, 1 samples an open pinyon-juniper woodland and 2 sites are placed on higher elevation mountain brush winter ranges. This area is not ranked as a priority for winter range acquisition. All sites were originally established in 1982 and reread in 1988 and 1995. All sites except for Sam's Canyon (17-9) were reread in 2000. The road to Sam's Canyon, on Ute Indian land was impassible in 2000.

Trend Study 17-48-00

Study site name: Blacktail Ridge.

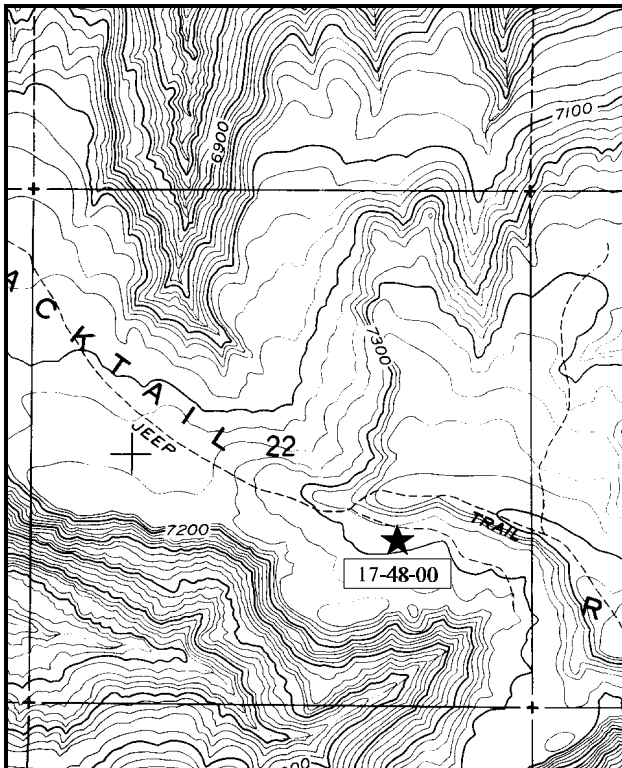
Range type: Big Sagebrush-Grass.

Compass bearing: frequency baseline 181°M.

Footmark (first frame placement) 5 feet, footmarks (frequency line 1 (6 & 91ft), line 2 (32ft), line 3 (53ft), line 4 (71ft).

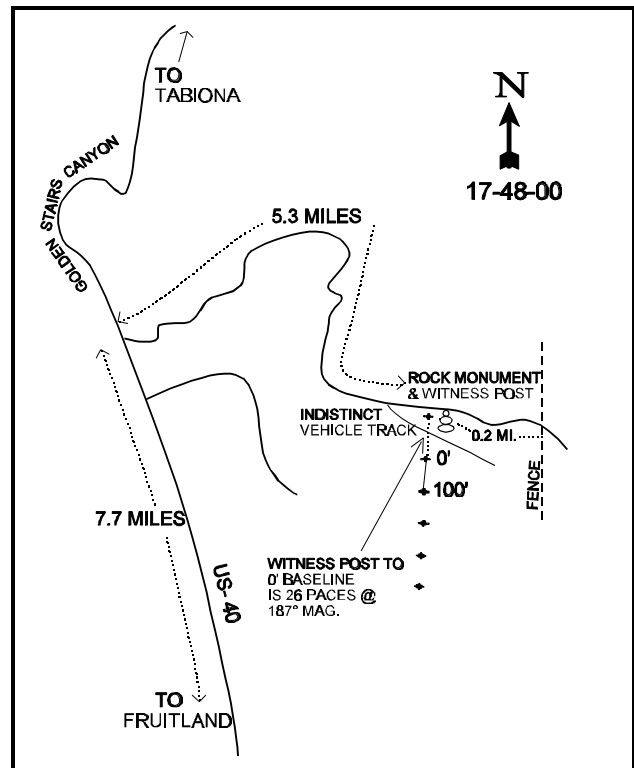
LOCATION DESCRIPTION

From Highway U.S. 40, take Highway U-208 towards Tabiona, at which point there will be a steep downgrade sign for Golden Stairs Canyon. Just before Golden Stairs Canyon, turn right through a gate. Proceed along this road for 5.3 miles, up a steep rocky four wheel drive road to the top of the bench and on to a sagebrush opening. If you go too far, there is a fence line 0.2 miles past the study area. The study area is marked by a rock cairn along the south side of the road. From the cairn, the 0-foot baseline stake is 36 paces away at a bearing of 247°M.



Map Name: Tabiona

Township 2S, Range 7W, Section 22



Diagrammatic Sketch

UTM 4460582 N, 528005 E

DISCUSSION

Trend Study No.17-48 (13-2)

***This site was not read in 2000. The site is no longer accessible by truck. Text has been retained. Consult the 1995 "Utah Big Game Range Trend Studies" report for maps and data tables.

The Blacktail Ridge trend study is located on winter range on Blacktail Ridge. The study site lies within a small sagebrush-grass park surrounded by dense pinyon-juniper woodland. Deer use of the area is moderately heavy. There was no sign of livestock grazing on this portion of the Two-Bar East Unit of the Red Creek Wildlife Management Area in 1988 or 1995. Terrain is essentially flat and the elevation is 7,300 feet. The land is owned by the Utah Division of Wildlife Resources.

Soil is light-colored and rather sandy in texture. Rooting depth is variable and obviously restricted in some areas where black sagebrush occurs. Little to no rock and pavement cover occurs on the surface. Ground cover from vegetation (basal cover) and litter was moderately good at 71% in 1982 and 64% in 1988. Percent bare ground declined in 1988 due to a significant increase in cryptogamic cover (2% to 14%). Aerial vegetative cover was estimated at 35% in 1995 with litter declining slightly to 46%. Percent bare ground continued to decline and currently ('95) is estimated at almost 18%. Erosion does not currently appear to be a problem on the site due to the lack of significant slope. Some erosion is occurring on disturbed areas, such as vehicle tracks.

Key browse on this site consist of mountain big sagebrush intermixed with black sagebrush. Some hybridizing is occurring between these two sub-species. Density of mature mountain big sagebrush has remained fairly constant at around 3,000 plants/acre since 1982. The large reduction in the number of mature plants noted in 1988 is the result of increased decadence from 6% in 1982 to 59% in 1988. It also appears that many of the mature plants were misidentified as young plants. Without any sign of reproduction (seedlings) in 1982 or 1988, this would have to be the only logical explanation for this disproportionate statistic for mature plants in 1988. Currently ('95), 31% of the stand is classified as decadent. Dead plants number only 940 plants/acre or a ratio of 1 dead plant for every 6 live plants. It appears that many of the decadent plants sampled in 1988 recovered by 1995. Data indicated that 57% of the mountain big sagebrush were heavily hedged in 1988. Vigor was also reduced on 20% of the population. During the 1995 reading, the proportion of heavily hedged sagebrush declined to only 12% with 18% displaying poor vigor. Some of the decadence in 1995 could have been the result of winter injury which was reported in field notes. Currently ('95), recruitment is low with only 7% of the population consisting of young plants and no seedlings were found.

Black sagebrush occurs in patches where soil depth is somewhat restricted. Percent decadency in the black sagebrush population is similar to those observed in mountain big sagebrush. The 1988 reading found dramatically increased decadence (0% to 46%) and poor vigor on 13% of the population. However, utilization was light indicating the possibility of increased decadence caused by prolonged drought coupled with winter injury. Percent decadence has now (1995) gone down to only 3% with mostly light use.

The herbaceous understory is well developed and accounts for nearly one half of the total vegetative cover. Eight perennial grass species were encountered in 1995 with needle-and-thread, mutton grass and Sandberg bluegrass providing 86% of the grass cover. Forbs are fairly diverse with 16 perennial species encountered in 1995. However, none of these species are particularly abundant.

1982 APPARENT TREND ASSESSMENT

Although the soil is highly erodible, the level terrain limits soil loss. Nonetheless, there is 28% exposed bare ground which, if on a slope, would readily erode. Current trend is stable. Vegetative composition and trend appear stable. There is little evidence of any profound vegetative change. Mountain big sagebrush may slowly be increasing, with black sagebrush slowly decreasing in numbers. Future readings of the study should provide a more clear picture.

1988 TREND ASSESSMENT

Trend for soil is up with an increase in basal vegetative cover from 6% to 16%. Litter cover declined but cryptogamic cover was more prevalent, increasing from 2% to 14%. Trend for the key browse species, mountain big sagebrush, is down. Big game heavily utilized the big sagebrush this year with 56% of the plants classified as all available and heavily hedged. Young plants now make up 28% of the population (refer to introductory discussion), while the majority of the mature sagebrush have shifted to a more decadent population. Decadence has increased from 7% to 58%. This is clearly supported by photographic comparisons, which show more decadent and severely clubbed sagebrush. Vigor is currently poor. Sagebrush cover is still moderately high at 22%, but declining. Grass frequency is high and has increased 39% since 1982. All but one of the grass species increased in quadrat frequency since 1982. Species composition is similar between years, with needle-and-thread the dominant species.

TREND ASSESSMENT

soil - up (5)

browse - down with dramatically increased decadence and very heavy use (1)

herbaceous understory - up (5)

1995 TREND ASSESSMENT

Soil trend is stable. Litter cover continues to decline, but percent bare ground decreased from 22% to 17%. Cryptogamic cover also declined significantly. Trend for the key browse species, mountain big sagebrush, has improved. Percent decadency has declined from 59% to 31% and the proportion of shrubs heavily utilized has declined from 57% to 12%. However, vigor is poor on 52% of the decadent sagebrush indicating a possible further die off of decadent individuals which would further reduce the rate of decadency. If all of the individuals with poor vigor should die, the total population will be reduced but the surviving plants will be healthier with less intraspecific competition. No seedlings were encountered in 1995, yet 7% of the population consists of young plants. Trend for the herbaceous understory is down slightly with the sum of nested frequency for two of the three dominant grasses declining significantly. Nested frequency of perennial forbs remained at similar levels to those reported in 1988.

TREND ASSESSMENT

soil - stable (3)

browse - slightly up with improving conditions for mountain big sagebrush (4)

herbaceous understory - slightly down (2)

Trend Study 17-49-00

Study site name: Grey Wolf Mountain .

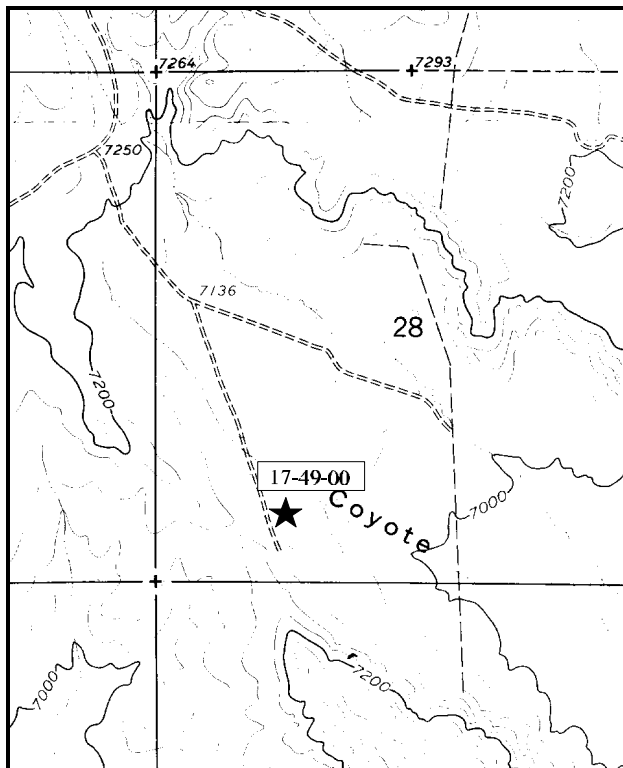
Range type: Big Sagebrush-Grass .

Compass bearing: frequency baseline 97°M .

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (15 & 96ft), line 2 (39ft), line 3 (52ft), line 4 (66ft).

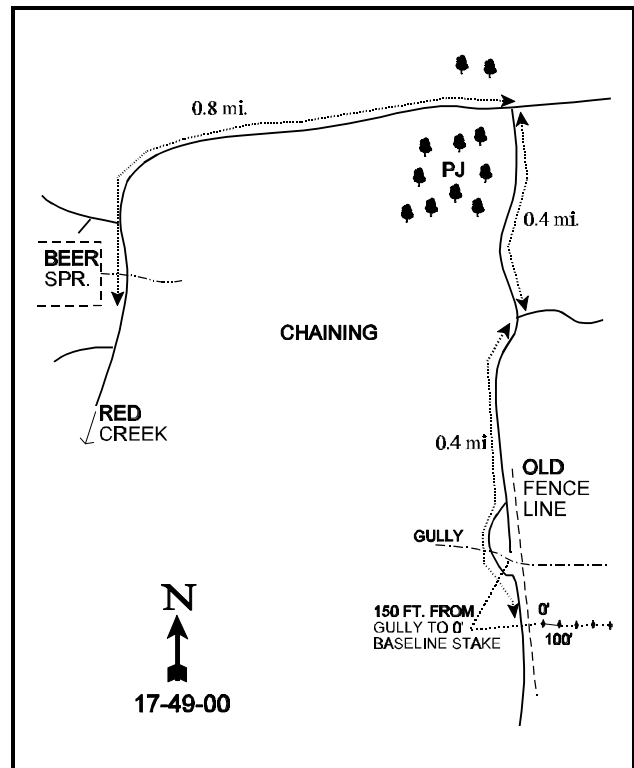
LOCATION DESCRIPTION

From U.S. 40 in Fruitland, travel north up the Red Creek Road 1.8 miles to a 3-way fork. Take the middle fork and go 2.6 miles. After crossing Red Creek, turn right onto a dirt road. Proceed northeast on this road for 1.95 miles to Beer Spring, and the fork to Study 17-51-00. From the southwest corner of the fenced spring bear right and continue for 0.8 miles. Turn right and go 0.35 miles. Stay right and go 0.4 miles going around the gully to an old fence line to a witness post on the left. The 0-foot stake is 20 feet east of the witness. It may not be possible to drive across the deep gully. The start of the baseline is approximately 150 feet south of the gully. The 0-foot baseline Stake, a green, short fencepost, is marked by browse tag #7090.



Map Name: Tabby Mountain

Township 2S, Range 8W, Section 28



Diagrammatic Sketch

UTM 4457860.345 N, 517197.962 E

DISCUSSION

Trend Study No. 17-49 (13-4)

The Grey Wolf Mountain trend study is located at the north end of Grey Wolf Mountain at an elevation of approximately 7,080 feet, near the head of Coyote Draw. Slope is less than 5% with an east aspect. The current trend study replaces a line-intercept study established in 1981. Land is administered by the Utah Division of Wildlife Resource in an area which is utilized as winter range by both deer and elk. The area was disked on contour and seeded in the fall of 1990 as a habitat and watershed improvement project. Livestock grazing was removed after the treatment. Cattle and horses grazed the area in the past and use was reported heavy in 1988. Numerous trespass cattle have been observed in the area during past readings. A pellet group transect read along the study site baseline in 2000 estimated 34 deer, 13 elk and 6 cow days use/acre (84 ddu/ha, 32 edu/ha and 15 cdu/ha). Deer and elk pellet groups appear to be primarily from winter use.

Soils are alluvially deposited and of considerable depth. Effective rooting depth was estimated at just over 15 inches. There is little rock in the soil profile and soil depth measurements were limited only by soil compaction. Actual soil depth would be deeper. Soil texture is a clay loam with a slightly alkaline soil reaction (pH of 7.5). Phosphorus is limited at only 3.6 ppm. Values less than 10 ppm can limit normal plant growth and development. Protective ground cover has been poor in the past, consisting mostly of old mature sagebrush cover. Currently ('00), there is still a high proportion of bare ground (58%), but herbaceous cover is now more abundant and better distributed. There is evidence of some overland flow between shrubs and rills are beginning to form which feed into a large (10' to 12' deep) active gully northeast of the site. The only thing keeping erosion from increasing is the cover provided by herbaceous vegetation.

The key browse species on the site is Wyoming big sagebrush. There appears to be some hybridization with mountain big sagebrush and basin big sagebrush since some of the sagebrush on this site display characteristics of both these subspecies. For this report to help alleviate any confusion, all the sagebrush encountered on the study was classified as Wyoming big sagebrush. These shrubs vary considerably in color, size, growth form and degree of hedging. Typically, Wyoming big sagebrush occurs more in the flat, integrating into the basin big sagebrush type which occurs more along the gullies with deeper soils. Wyoming big sagebrush had an estimated density of 1,265 mostly mature plants/acre in 1982. By 1988, the density had increased to 6,466 plants/acre due to a dramatic increase in the number of young shrubs (4,733 plants/acre). Utilization was light to moderate with heavy use reported on 11% of the population. After the disking treatment (thinning) in 1990, the number of mature sagebrush remained similar (1,040 plants/acre) with the number of seedlings and young declining dramatically. The percentage of seedlings and young still remain in adequate numbers to maintain the population. The percentage of decadent plants was very low in 1982 and 1988 at 5% and 3% respectively. It has since increased slightly to 10% in 1995 and 13% in 2000. Use was light to moderate from 1982 through 1995. Current ('00) use is moderate to heavy with 21% of the plants sampled displaying heavy use (>60% of stems browsed). Even with the increased heavy use, vigor remains normal on all but 11% of the decadent plants which appear to be dying.

Small populations of winterfat, fourwing saltbush and rubber rabbitbrush provide a limited amount of additional forage for wintering big game. Corymbed eriogonum is also fairly abundant. The undesirable increaser, narrowleaf low rabbitbrush, provides about 1/3 of the shrub cover with a stable population of around 3,000 plants/acre since 1988.

Before treatment, the herbaceous understory consisted of crested wheatgrass and a few forbs. Crested wheatgrass was reported to be heavily utilized in both 1982 and 1988. As a result of use and competition, vigor was reduced. After the disking treatment, crested wheatgrass declined significantly in nested frequency, but it is still the most abundant grass accounting for 93% and 96% of the grass cover in 1995 and 2000 respectively.

Several other grasses were encountered on the site yet all occur in small numbers. Forbs are also more abundant after treatment with 19 perennial species sampled in 1995. Total forb cover was almost 9%. Useful species include Lewis flax, yellow sweet clover, low penstemon and scarlet globemallow which accounted for 53% of the forb cover. In 2000, nested frequency of crested wheatgrass increased significantly and is now similar to pretreatment levels. Cover has increased to 17%. Due to drought conditions, cover and frequency of forbs have declined.

1982 APPARENT TREND ASSESSMENT

Trend is difficult to evaluate. Based on soil loss, the percentage of bare ground and the trampling effect of livestock, soil trend is probably slightly downward. However, from a management standpoint, this may be an acceptable trade-off if shrub density and composition can be improved. A rather speculative estimate of vegetative trend is stable to slowly improving. The apparent increase in the key species is encouraging, especially if increases of low rabbitbrush can be limited or avoided.

1988 TREND ASSESSMENT

Trend for soil is stable yet in poor condition. A large amount of bare soil remains exposed, 50% of the ground surface. Litter cover is poor and severe gullyng continues in Coyote Draw which is adjacent to the site. With reduced grass vigor and litter build-up, there is accelerated soil loss from the flat. Trend for the key browse species is up. Sagebrush density has gone from 1,265 plants/acre to 6,466 plants/acre. The density of mature plants is similar between years, with a moderate density of 1,533 mature plants/acre. The large increase in sagebrush density occurred because of the number of young plants. Sagebrush has increased from 18% to 44% of the browse composition. Overall, use remains moderate and vigor is fair. Annual growth and seed production were low this year. Density of undesirable browse species has increased since 1982. Trend for the herbaceous understory is slightly up with an increase in quadrat frequency of grasses and forbs.

TREND ASSESSMENT

soil - stable but poor condition (3)

browse - up (5)

herbaceous understory - slightly up (4)

1995 TREND ASSESSMENT

Since the contoured thinning treatment of sagebrush, percent bare ground has increased from 50% to 54%. Litter cover also declined from 36% to 22%, but the litter is more evenly distributed. Even with these negative changes, sum of nested frequency of grasses and forbs increased providing much better soil protection. No erosion was reported in 1995 and trend for soil is considered stable. The browse trend is stable. Even though total density of Wyoming big sagebrush declined substantially, the number of mature plants remained similar to previous years. The disking treatment thinned the population and eliminated most of the older plants. The remaining stand has better vigor and is less heavily hedged. Percent decadence is still low at 10%. Trend for the herbaceous understory is up slightly. Sum of nested frequency of grasses increased slightly, but more importantly composition is improved with 7 new perennial grass species being sampled. Sum of nested frequency of forbs increased with significant increases in 15 of the 20 perennial species sampled in 1995.

TREND ASSESSMENT

soil - stable (3)

browse - stable with better composition characteristics (3)

herbaceous understory - slightly up with more species diversity (4)

2000 TREND ASSESSMENT

Trend for soil is up slightly with an increase in relative percent cover of vegetation and litter and a decline in bare ground. The ratio of protective cover to bare soil has also improved. In addition, herbaceous cover has increased slightly since 1995. Trend for browse is stable. Density of the key browse species, Wyoming big sagebrush, is stable. Use is heavier but vigor is normal and percent decadence remains low at 13%. Trend for the herbaceous understory is mixed. Sum of nested frequency of perennial grasses has increased slightly, while nested frequency of the dominant grass, crested wheatgrass, has increased significantly. Crested wheatgrass provides 96% of the grass cover and 81% of the herbaceous cover. Due to drought conditions, sum of nested frequency for perennial forbs has declined by 53%. Cover of forbs during the same period has declined from 9% in 1995 to 3% in 2000. Perennial forbs provided 45% of the herbaceous cover in 1995. Currently, perennial forbs account for only 15% of the herbaceous cover. Taking all of these factors into consideration, trend for the herbaceous understory is considered down slightly due to a substantial decline in cover and frequency of perennial forbs which used to provide nearly half of the herbaceous cover.

TREND ASSESSMENT

soil - up slightly (4)

browse - stable (3)

herbaceous understory - stable for grasses but down for forbs, down slightly overall (2)

HERBACEOUS TRENDS --

Herd unit 17 , Study no: 49

T y p e	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron cristatum	_b 316	_a 260	_b 326	43	99	80	100	9.44	17.05
G	Agropyron dasystachyum	_a 6	_{ab} 21	_b 31	2	3	9	12	.28	.35
G	Agropyron intermedium	-	30	5	-	-	13	2	.12	.03
G	Bromus inermis	-	4	2	-	-	2	1	.01	.03
G	Carex spp.	_a -	_b 10	_a 1	-	-	4	1	.04	.00
G	Dactylis glomerata	_a -	_b 8	_b 5	-	-	4	3	.04	.09
G	Oryzopsis hymenoides	-	6	-	1	-	2	-	.06	-
G	Poa fendleriana	-	-	7	-	-	-	2	-	.15
G	Poa secunda	-	2	-	-	-	1	-	.03	-
G	Secale cereale (a)	-	_b 7	_a -	-	-	3	-	.06	-
G	Stipa comata	-	-	1	-	-	-	1	-	.03
Total for Annual Grasses		0	7	0	0	0	3	0	0.06	0
Total for Perennial Grasses		322	341	378	46	102	115	122	10.04	17.76
Total for Grasses		322	348	378	46	102	118	122	10.10	17.76

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	Agoseris glauca	a ⁻	b ⁶¹	a ⁻	-	-	18	-	1.92	-
F	Allium spp.	a ⁻	b ⁶	a ⁻	-	-	4	-	.02	-
F	Arabis spp.	-	-	3	1	-	-	1	-	.00
F	Astragalus convallarius	17	23	6	6	8	11	4	.21	.07
F	Astragalus mollissimus	a ⁻	ab ⁵	b ⁴	-	-	2	3	.01	.04
F	Astragalus tenellus	1	-	-	-	1	-	-	-	-
F	Calochortus nuttallii	a ⁻	b ⁷	a ⁻	-	-	6	-	.03	-
F	Chaenactis douglasii	-	-	3	-	-	-	1	-	.00
F	Chenopodium fremontii (a)	-	b ⁷	a ⁻	-	-	3	-	.01	-
F	Chenopodium leptophyllum (a)	-	b ¹⁰	a ⁻	-	-	5	-	.02	-
F	Cirsium spp.	-	-	3	-	-	-	1	.15	.00
F	Cordylanthus kingii (a)	-	b ¹¹	a ⁻	-	-	6	-	.08	-
F	Cymopterus spp.	-	-	1	-	-	-	1	-	.15
F	Descurainia pinnata (a)	-	5	-	-	-	2	-	.01	-
F	Erigeron eatonii	-	3	-	-	-	1	-	.00	-
F	Haplopappus spp.	-	-	-	2	-	-	-	-	-
F	Hedysarum boreale	-	7	5	-	-	3	4	.08	.07
F	Lactuca serriola	-	1	-	-	-	1	-	.01	-
F	Linum lewisii	a ⁻	c ⁶⁹	b ¹⁹	-	-	34	13	1.16	.36
F	Lygodesmia grandiflora	-	3	-	2	-	1	-	.00	-
F	Machaeranthera canescens	b ²¹	a ⁴	a ⁴	4	12	1	2	.03	.03
F	Machaeranthera grindelioides	4	-	-	-	2	-	-	.00	-
F	Melilotus officinalis	a ⁻	b ¹⁶	a ³	-	-	9	1	.32	.15
F	Penstemon humilis	10	11	8	2	6	5	6	.65	.05
F	Phlox hoodii	b ¹⁰¹	a ³⁵	a ³⁸	-	42	16	20	.43	.96
F	Phlox longifolia	b ⁷⁰	b ⁷⁶	a ²⁰	9	25	28	7	.29	.13
F	Sanguisorba minor	a ⁻	b ²⁸	a ²	-	-	15	2	.21	.03
F	Sphaeralcea coccinea	183	166	152	44	77	70	63	2.40	.98
F	Tragopogon dubius	ab ⁴	b ⁸	a ⁻	-	2	5	-	.18	-
F	Trifolium gymnocarpon	a ⁸	b ⁴⁶	b ³³	3	5	22	15	.19	.17
Total for Annual Forbs		0	33	0	0	0	16	0	0.12	0
Total for Perennial Forbs		419	575	304	73	180	252	144	8.34	3.24
Total for Forbs		419	608	304	73	180	268	144	8.47	3.24

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --

Herd unit 17 , Study no: 49

T y p e	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	<i>Artemisia tridentata</i> <i>wyomingensis</i>	50	65	2.61	3.95
B	<i>Atriplex canescens</i>	0	1	-	-
B	<i>Ceratoides lanata</i>	9	6	.03	.18
B	<i>Chrysothamnus depressus</i>	2	2	.01	-
B	<i>Chrysothamnus nauseosus</i> <i>hololeucus</i>	3	5	.03	.03
B	<i>Chrysothamnus viscidiflorus</i> <i>stenophyllus</i>	54	61	1.96	2.41
B	<i>Eriogonum corymbosum</i>	71	72	1.45	2.00
B	<i>Gutierrezia sarothrae</i>	1	4	-	.03
B	<i>Opuntia</i> spp.	15	14	.01	.00
B	<i>Pinus edulis</i>	0	1	-	-
Total for Browse		205	231	6.11	8.63

BASIC COVER --

Herd unit 17 , Study no: 49

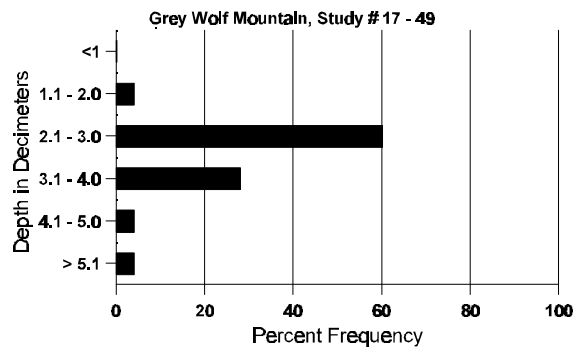
Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	344	341	6.25	8.00	23.68	30.28
Rock	-	3	0	0	0	.00
Pavement	-	41	0	0	0	.11
Litter	377	374	40.25	36.00	21.52	33.00
Cryptogams	16	16	0	6.25	.23	.49
Bare Ground	376	355	53.50	49.75	54.37	58.32

SOIL ANALYSIS DATA --

Herd Unit 17, Study # 49, Study Name: Grey Wolf Mountain

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
15.51	60.2 (16.61)	7.5	42.9	26.8	30.3	2.1	3.6	204.8	0.7

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 49

Type	Quadrat Frequency	
	'95	'00
Rabbit	2	1
Elk	7	15
Deer	11	25
Cattle	1	2

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
'00	'00
35	N/A
165	13 (31)
444	34 (84)
70	6 (14)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 49

A Y G R E		Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht. Cr.		
Artemisia tridentata wyomingensis																		
S	82	17	-	-	-	-	-	-	-	-	17	-	-	-	1133			17
	88	79	3	-	2	-	-	-	-	-	76	-	7	1	5600			84
	95	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	82	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	88	58	10	1	2	-	-	-	-	-	64	1	6	-	4733			71
	95	52	-	-	-	-	-	-	-	-	52	-	-	-	1040			52
	00	32	3	6	-	-	-	-	-	-	41	-	-	-	820			41
M	82	8	7	1	-	-	-	-	-	-	16	-	-	-	1066	23	27	16
	88	10	4	9	-	-	-	-	-	-	18	2	3	-	1533	20	17	23
	95	41	9	2	-	-	-	-	-	-	52	-	-	-	1040	15	20	52
	00	19	39	23	-	-	-	-	-	-	81	-	-	-	1620	15	22	81
D	82	-	1	-	-	-	-	-	-	-	-	-	1	-	66			1
	88	2	-	1	-	-	-	-	-	-	2	-	1	-	200			3
	95	3	7	1	-	-	-	-	-	-	5	-	-	6	220			11
	00	6	12	-	-	-	-	-	-	-	16	-	-	2	360			18
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	780			39
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	420			21
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		42%			05%			05%			+80%							
'88		14%			11%			10%			-64%							
'95		14%			03%			05%			+18%							
'00		39%			21%			01%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	1265	Dec:	5%			
												'88	6466		3%			
												'95	2300		10%			
												'00	2800		13%			
Atriplex canescens																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	1	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		100%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	20		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Ceratoides lanata																		
Y	82	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	82	2	2	-	-	-	-	-	-	-	3	1	-	-	266	8 8	4	
	88	-	-	2	-	-	-	-	-	-	2	-	-	-	133	7 7	2	
	95	13	4	-	-	-	-	-	-	-	17	-	-	-	340	10 12	17	
	00	3	2	6	-	-	-	-	-	-	11	-	-	-	220	5 9	11	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		40%			00%			00%			-40%							
'88		00%			67%			00%			+45%							
'95		22%			00%			00%			-39%							
'00		18%			55%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	332	Dec:	-			
												'88	199		-			
												'95	360		-			
												'00	220		-			
Chrysothamnus depressus																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20	6 8	1	
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	- -	2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%			+ 0%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	40		-			
												'00	40		-			

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total									
		1	2	3	4		5	6		7	8	9	1	2	3	4		
Chrysothamnus nauseosus hololeucus																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20	17	14	1
	00	10	-	-	-	-	-	-	-	-	10	-	-	-	200	9	14	10
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%			+79%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)											'82	0	Dec:	-				
											'88	0		-				
											'95	60		-				
											'00	280		-				
Chrysothamnus viscidiflorus stenophyllus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	6	-	-	-	-	-	-	-	-	4	-	2	-	400			6
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	11	-	-	3	-	-	-	-	-	14	-	-	-	933			14
	95	28	-	-	-	-	-	-	-	-	28	-	-	-	560			28
	00	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	82	29	-	-	-	-	-	-	-	-	29	-	-	-	1933	10	12	29
	88	13	3	2	-	-	-	-	-	-	17	1	-	-	1200	7	5	18
	95	130	2	-	-	-	-	-	-	-	132	-	-	-	2640	11	14	132
	00	141	-	-	1	-	-	-	-	-	138	4	-	-	2840	7	12	142
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	13	8	-	-	-	-	-	-	-	16	-	5	-	1400			21
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+45%							
'88		21%			04%			09%			- 9%							
'95		01%			00%			00%			- 8%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)											'82	1933	Dec:	0%				
											'88	3533		40%				
											'95	3200		0%				
											'00	2960		1%				

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Eriogonum corymbosum																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	1	-	-	-	-	-	-	-	-	-	-	-	-	66		1	
	95	5	-	-	-	-	-	-	-	-	-	-	-	-	100		5	
	00	2	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	4	2	-	-	-	-	-	-	-	-	-	-	-	400		6	
	95	28	-	-	-	-	-	-	-	-	-	-	-	-	560		28	
	00	9	-	-	-	-	-	-	-	-	-	-	-	-	180		9	
M	82	21	14	-	3	-	-	-	-	-	-	5	6	-	2533	13	15	38
	88	12	10	4	2	-	-	-	-	-	-	-	-	-	1866	14	13	28
	95	117	-	-	3	-	-	-	-	-	-	-	-	-	2400	14	16	120
	00	126	-	-	-	-	-	-	-	-	-	1	-	-	2520	12	16	126
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	9	5	3	1	-	-	-	-	-	-	-	-	-	1200		18	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	3	-	-	-	-	-	-	-	-	-	-	-	1	60		3	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		37%			00%			16%			+27%							
'88		33%			13%			00%			-15%							
'95		00%			00%			00%			- 7%							
'00		00%			00%			.72%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	2533	Dec:	0%			
												'88	3466		35%			
												'95	2960		0%			
												'00	2760		2%			
Gutierrezia sarothrae																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	4	-	-	-	-	-	-	-	-	-	-	-	-	266	8	8	4
	95	1	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	1
	00	6	-	-	-	-	-	-	-	-	-	-	-	-	120	6	9	6
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	2	-	-	-	-	-	-	-	-	-	-	1	133			2	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			17%			-95%							
'95		00%			00%			00%			+83%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	399		33%			
												'95	20		0%			
												'00	120		0%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Opuntia spp.																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	8	-	-	1	-	-	-	-	-	-	-	-	-	600		9	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	2	-	-	-	-	-	-	-	-	-	-	-	-	133		2	
	95	2	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	82	9	-	-	-	-	-	-	-	-	-	-	-	-	600	3 7	9	
	88	4	-	-	-	-	-	-	-	-	-	-	-	-	266	4 10	4	
	95	16	-	-	-	-	-	-	-	-	-	-	-	-	320	4 6	16	
	00	14	-	-	-	-	-	-	-	-	-	-	-	-	280	3 3	14	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	5	-	-	-	-	-	-	-	-	-	-	-	-	333		5	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+18%							
'88		00%			00%			00%			-51%							
'95		00%			00%			00%			-17%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	600	Dec:	0%			
												'88	732		45%			
												'95	360		0%			
												'00	300		7%			
Pinus edulis																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	20		-			

Trend Study 17-50-00

Study site name: Lower Santaquin Draw .

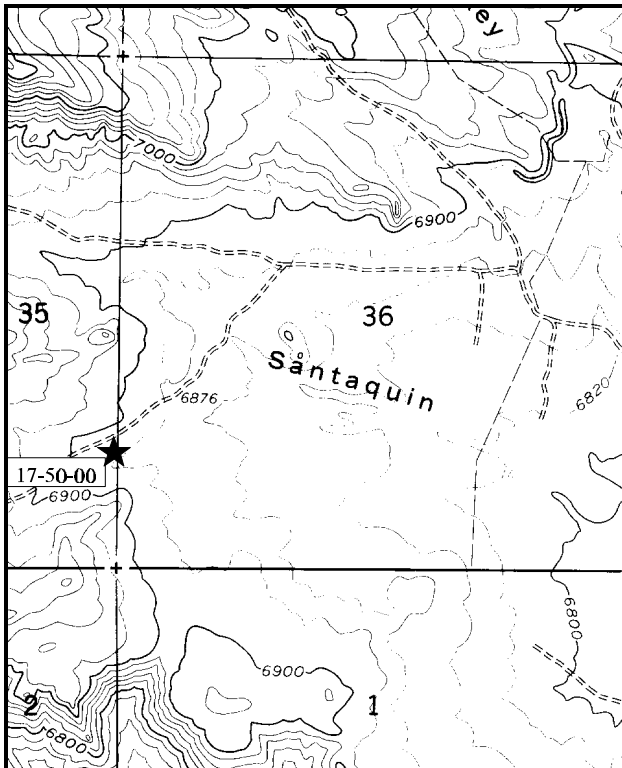
Range type: Big Sagebrush-Grass .

Compass bearing: frequency baseline 180°M .

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 83ft), line 2 (38ft), line 3 (54ft), line 4 (79ft).

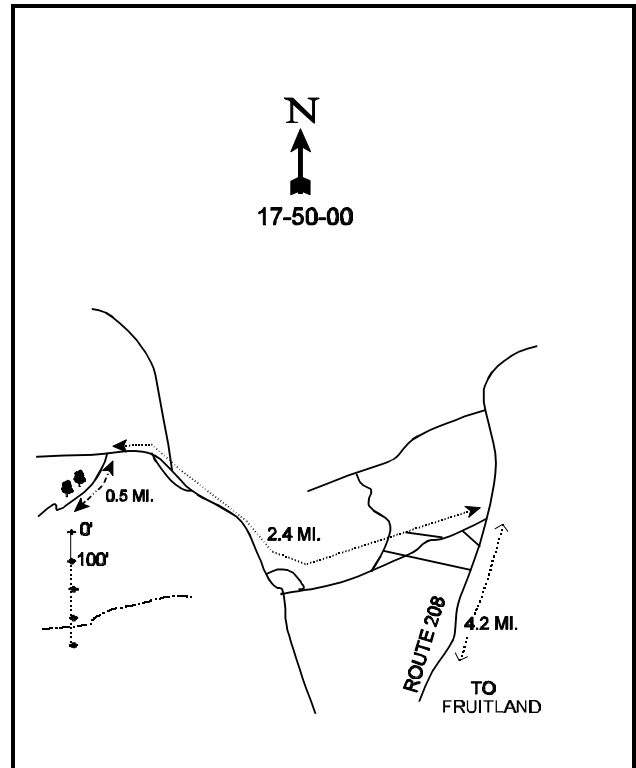
LOCATION DESCRIPTION

From Highway U.S. 40, take Route 208 towards Tabiona for 4.2 miles and turn west onto a dirt road. Go 2.4 miles on the main road towards Santaquin Draw. Take the road to the left for 0.5 miles to the next intersection to a group of junipers and a witness post. From the witness post the 0-foot stake is 30 feet to the south. The 0-foot stake is marked with browse tag number 7021.



Map Name: Tabiona

Township 2S , Range 8W , Section 35



Diagrammatic Sketch

UTM 4456389.022 N, 521682.562 E

DISCUSSION

Trend Study No. 17-50 (13-5)

The Lower Santaquin Draw trend study monitors a sagebrush-grass site on deer and elk winter range in Lower Santaquin Draw. Terrain is nearly level and elevation is approximately 6,880 feet. Low ridges covered with pinyon-juniper are within the immediate proximity of the study site. The surrounding woodland provides important escape and thermal cover. The area is obviously critical winter range as many antler sheds, winter-killed deer and pellet groups were observed during past readings. Numerous jackrabbit pellets and cattle pats were also observed during study establishment in 1982. Pellet group data taken along the study baseline in 2000 estimated 15 deer, 31 elk and 8 cow days use/acre (37 ddu/ha, 77 edu/ha and 20 cdu/ha). About half of the deer pellet groups appear to be from spring use with the other half from winter. About 75% of the elk pellet groups appear to be from fall/winter use with the rest from spring use.

Soils are alluvially deposited and deep but generally undifferentiated. Soil texture is a loam with few rocks on the surface or within the profile. Effective rooting depth is estimated at just over 10 inches. The soil would be expected to be much deeper however and penetrometer readings were limited by soil compaction and a hardpan. Ground cover is fair for this type with percent bare ground ranging from 33% to 45% since 1982. Soil on the site is very light textured and easily erodible. Sheet erosion is a factor, but it is greatly reduced by the levelness of the terrain and an adequate amount of vegetation and litter cover. However, stream courses in the area tend to be rather deep, steep-sided gullies, effectively lowering the immediate areas water table. There are active gullies around the site and a single 4-foot gully near the end of the baseline.

The key browse species consists of a moderately dense stand of Wyoming big sagebrush. This site, like the previous one, contain sagebrush with characteristics of both mountain and Wyoming big sagebrush. All sagebrush in this report are considered Wyoming big sagebrush. Total density has remained similar since 1982 at around 5,000 plants/acre. During the 1982 reading, 28% of the sagebrush was heavily hedged and 34% of the population displayed poor vigor. Percent decadence was reported at 25%. By 1988, percent decadence increased to 44% with more moderate use, yet improved vigor. Percent decadence declined to 8% in 1995 with heavy use reported on only 17% of the population. Use is similar in 2000, but due to the dry conditions, more sagebrush show poor vigor and percent decadence again increased to 22%. Decadent sagebrush classified as dying is currently ('00) 46% or approximately 500 plants/acre. The number of seedlings and young plants have declined since 1988, but numbers are adequate to maintain the population.

The only other palatable browse species includes a small but stable population of winterfat. Density has ranged from 866 plants/acre in 1982 to 1,100 in 2000. Use was moderate to heavy in 1982 and 1988, but mostly light in 1995. Use was moderate to heavy in 2000. Other less desirable browse occur in low numbers and consists of narrowleaf low rabbitbrush, broom snakeweed and pricklypear cactus.

The herbaceous understory is moderately abundant but only a few species are common. Grasses provided 44% of the vegetative cover in 1995 and 53% in 2000. Five grass species were found on the site in 1995 and 2000, but crested wheatgrass dominates the composition by making up respectively 95% and 98% of the grass cover. Forbs accounted for 15% of the vegetation cover in 1995 declining to only 8% in 2000. The forb composition is diverse, but only 3 species (timber poisonvetch, Hood's phlox and scarlet globemallow), provides 88% of the forb cover in 1995 and 96% in 2000. Sum of nested frequency of grasses and forbs slightly decreased in 2000 due to drought.

1982 APPARENT TREND ASSESSMENT

Overall, this area appears to be relatively stable. Soil trend may be down slightly due to continuous low level erosion and soil deposition, although the level terrain helps to minimize the effect. Vegetatively, Wyoming big sagebrush may be slowly expanding. Grasses are being heavily impacted by livestock, which is thought to favor the shrub component. Forbs are insignificant forage sources and are generally undesirable species. Undesirable shrubs include pricklypear and narrowleaf low rabbitbrush, neither of which should be allowed to increase much beyond their present level.

1988 TREND ASSESSMENT

Due to a slight decrease in litter cover, there was a slight increase in the percentage of bare soil in 1988. However, the level terrain limits erosion and trend for soil is still considered stable. The density of the key browse species, Wyoming big sagebrush, remained similar to that of 1982. Vigor has improved since 1982. Most mature plants were rated in form class 2, moderately hedged, rather than form class 3 (heavily hedged). However, a higher percentage (44%) of the sagebrush population was classified as decadent. There is still a substantial population of seedling and young Wyoming big sagebrush. Average sagebrush cover is 21% on the study site. Trend for grasses and forbs are up due to a significant increase in quadrat frequency. Crested wheatgrass, the most abundant grass, tripled its quadrat frequency since 1982. Scarlet globemallow also greatly increased in quadrat frequency (23 to 66).

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - up (5)

1995 TREND ASSESSMENT

Soil trend is up slightly. Percent bare ground declined from 38% to 33% and photos indicate a dramatic increase in herbaceous cover. Nested frequency of grasses and forbs have increased. Trend for sagebrush is slightly improved. Percent decadence has declined from 44% to 8%. It appears that many of the decadent plants surveyed in 1988 are now classified as healthy mature plants. The number of seedlings and young have declined but there are adequate numbers to maintain the population. The secondary browse, winterfat, also shows an improving trend. Heavy use is reduced, vigor is improved and percent decadency has decreased significantly from 15% to 2%. Trend for grasses is slightly up with a significant increase in the nested frequency of crested wheatgrass. Nested frequency of forbs increased slightly with 11 perennial species counted. Overall trend is up slightly.

TREND ASSESSMENT

soil - slightly up (4)

browse - slightly up (4)

herbaceous understory - up slightly (4)

2000 TREND ASSESSMENT

Trend for soil is stable. Relative percent cover of bare ground increased slightly while litter and vegetation cover declined slightly. However, cryptogamic cover increased and the ratio of protective ground cover (vegetation, litter and cryptogams) to bare ground remained similar to 1995 levels. There is some erosion occurring, but it is minimized by the gentle terrain. Trend for the key browse species, Wyoming big sagebrush, is stable. Use is heavier than in 1995. The proportion of sagebrush in poor vigor has increased slightly and

percent decadence has increased from 8% to 22%. This is still relatively low for this type of site. Biotic potential (# of seedlings) and the proportion of young plants in the population have remained similar to 1995 levels and there appears to be enough young plants to maintain the population. Winterfat shows heavier use but a stable population. Trend for the herbaceous understory is considered stable. Sum of nested frequency of perennial grasses has declined slightly but the small decline in the nested frequency of the dominant species, crested wheatgrass, was not significant. Sum of nested frequency for perennial forbs also declined substantially, with a corresponding drop in cover. Since the nested frequency of the dominant herbaceous species, crested wheatgrass, did not decline significantly and the overall decline in sum of nested frequency for perennial grasses and forbs is relatively small, the overall herbaceous understory trend is considered stable.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Herd unit 17 , Study no: 50

T y p e	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron cristatum	a ³⁰⁷	b ³³¹	ab ³¹⁹	32	99	98	95	12.21	16.75
G	Agropyron dasystachyum	a ⁻	b ¹³	b ⁹	1	-	5	5	.02	.05
G	Carex spp.	b ³⁷	a ⁹	a ¹⁰	8	16	4	5	.07	.10
G	Oryzopsis hymenoides	b ¹⁵	ab ⁹	a ²	1	8	5	2	.22	.04
G	Stipa comata	a ⁻	b ¹³	b ⁷	-	-	7	3	.30	.06
Total for Annual Grasses		0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		359	375	347	42	123	119	110	12.84	17.01
Total for Grasses		359	375	347	42	123	119	110	12.84	17.01
F	Allium spp.	-	2	-	-	-	1	-	.00	-
F	Arabis spp.	-	-	-	2	-	-	-	-	-
F	Astragalus convallarius	a ⁴	b ²⁰	ab ¹⁸	4	2	14	9	.78	.09
F	Astragalus tenellus	a ⁻	b ⁶	a ⁻	-	-	5	-	.19	-
F	Calochortus nuttallii	-	3	-	-	-	2	-	.01	-
F	Cordylanthus kingii (a)	-	1	-	-	-	1	-	.01	-
F	Descurainia spp. (a)	-	1	-	-	-	1	-	.00	-
F	Draba spp. (a)	-	5	-	-	-	2	-	.01	-
F	Leucelene ericoides	a ⁻	a ⁻	b ⁸	2	-	-	4	-	.04
F	Machaeranthera canescens	ab ²	b ¹⁰	a ⁻	12	2	5	-	.02	-
F	Phlox hoodii	79	77	72	-	36	33	34	2.02	1.77
F	Phlox longifolia	20	25	10	1	8	11	4	.06	.02
F	Schoenocrambe linifolia	2	3	-	1	1	2	-	.01	-
F	Senecio multilobatus	1	-	-	-	1	-	-	-	-

T y p e	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	<i>Sphaeralcea coccinea</i>	_b 143	_a 121	_a 109	23	66	55	47	.98	.65
F	<i>Tragopogon dubius</i>	-	-	1	-	-	-	1	-	.00
F	<i>Trifolium gymnocarpon</i>	_a 6	_b 20	_{ab} 11	7	3	9	4	.17	.02
Total for Annual Forbs		0	7	0	0	0	4	0	0.02	0
Total for Perennial Forbs		257	287	229	52	119	137	103	4.26	2.62
Total for Forbs		257	294	229	52	119	141	103	4.29	2.62

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --

Herd unit 17 , Study no: 50

T y p e	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	<i>Artemisia tridentata wyomingensis</i>	87	80	10.30	9.44
B	<i>Ceratoides lanata</i>	35	34	.62	1.03
B	<i>Chrysothamnus depressus</i>	0	1	-	-
B	<i>Chrysothamnus nauseosus graveolens</i>	0	12	-	.69
B	<i>Chrysothamnus nauseosus hololeucus</i>	9	1	.33	.00
B	<i>Chrysothamnus viscidiflorus stenophyllus</i>	5	5	.31	.30
B	<i>Gutierrezia sarothrae</i>	3	1	.06	-
B	<i>Leptodactylon pungens</i>	3	0	.01	-
B	<i>Opuntia spp.</i>	28	34	.44	.76
B	<i>Pediocactus simpsonii</i>	0	2	-	.00
B	<i>Purshia tridentata</i>	0	0	-	.15
Total for Browse		170	170	12.09	12.38

BASIC COVER --

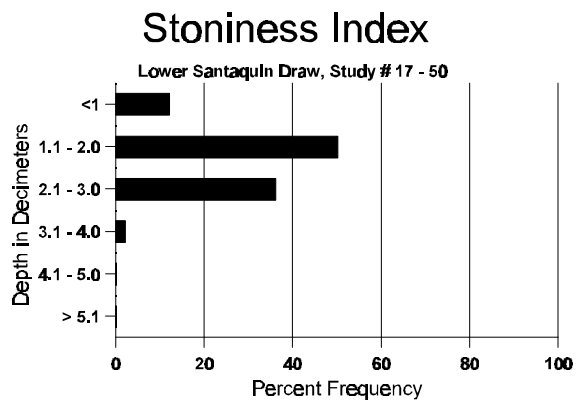
Herd unit 17 , Study no: 50

Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	345	338	6.50	7.00	32.09	31.07
Rock	5	-	0	0	.15	0
Pavement	8	15	0	0	.01	.02
Litter	387	374	58.50	53.00	39.47	40.61
Cryptogams	112	188	0	1.75	1.44	4.18
Bare Ground	316	342	35.00	38.25	32.60	44.56

SOIL ANALYSIS DATA --

Herd Unit 17, Study # 50, Study Name: Lower Santaquin Draw

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
10.57	61.4 (15.35)	7.6	45.3	36.2	18.6	1.0	2.0	99.2	0.5



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 50

Type	Quadrat Frequency		Pellet Transect	
	'95	'00	Pellet Groups per Acre 00	Days Use per Acre (ha) 00
Rabbit	4	15	400	N/A
Elk	17	28	52	4 (10)
Deer	29	15	1801	139 (342)
Cattle	-	4	104	8 (20)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 50

Artemisia tridentata wyomingensis																	
A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
S	82	28	-	-	-	-	-	-	-	-	7	21	-	-	1866		28
	88	11	-	-	-	-	-	-	-	-	11	-	-	-	733		11
	95	9	-	-	-	-	-	-	-	-	9	-	-	-	180		9
	00	5	-	-	-	-	-	-	-	-	5	-	-	-	100		5
Y	82	17	2	-	-	-	-	-	-	-	16	3	-	-	1266		19
	88	18	1	1	-	-	-	-	-	-	20	-	-	-	1333		20
	95	32	12	-	-	-	-	-	-	-	39	-	5	-	880		44
	00	20	18	-	-	-	-	-	-	-	38	-	-	-	760		38
M	82	7	17	14	-	-	-	-	-	-	18	13	7	-	2533	20 23	38
	88	5	14	3	-	-	-	-	-	-	21	1	-	-	1466	19 23	22
	95	10	148	40	3	4	-	-	-	-	205	-	-	-	4100	18 30	205
	00	23	96	38	-	1	-	-	-	-	149	2	7	-	3160	18 26	158
D	82	-	12	7	-	-	-	-	-	-	-	-	14	5	1266		19
	88	8	19	6	-	-	-	-	-	-	30	1	-	2	2200		33
	95	2	15	5	-	-	-	-	-	-	11	-	-	11	440		22
	00	13	14	20	2	5	1	-	-	-	30	-	-	25	1100		55
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	500		25
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	420		21
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
		'82			41%			28%			- 1%						
		'88			45%			13%			+ 8%						
		'95			66%			17%			- 7%						
		'00			53%			24%									
Total Plants/Acre (excluding Dead & Seedlings)												'82	5065	Dec:	25%		
												'88	4999		44%		
												'95	5420		8%		
												'00	5020		22%		

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total						
		1	2	3	4									
Ceratoides lanata														
S	82	-	-	-	-	-	-	-	-	-	0		0	
	88	1	-	-	-	-	-	-	-	-	66		1	
	95	3	-	-	-	-	-	-	-	-	60		3	
	00	-	-	-	-	-	-	-	-	-	0		0	
Y	82	-	-	-	-	-	-	-	-	-	0		0	
	88	5	3	1	-	-	-	-	-	-	600		9	
	95	3	1	-	-	-	-	-	-	-	80		4	
	00	2	-	-	-	-	-	-	-	-	40		2	
M	82	3	6	1	-	-	-	-	-	-	666	10	8	10
	88	3	1	3	1	-	-	-	-	-	533	6	8	8
	95	43	3	1	-	-	-	-	-	-	940	11	13	47
	00	4	21	24	-	1	-	-	-	-	1000	7	8	50
D	82	-	-	3	-	-	-	-	-	-	200			3
	88	2	-	1	-	-	-	-	-	-	200			3
	95	1	-	-	-	-	-	-	-	-	20			1
	00	-	2	-	-	-	1	-	-	-	60			3
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change						
'82		46%		31%		08%		+35%						
'88		20%		25%		10%		-22%						
'95		08%		02%		04%		+ 5%						
'00		44%		45%		04%								
Total Plants/Acre (excluding Dead & Seedlings)										'82	866	Dec:	23%	
										'88	1333		15%	
										'95	1040		2%	
										'00	1100		5%	
Chrysothamnus depressus														
M	82	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	1	-	-	-	-	-	-	-	20	-	-	1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change						
'82		00%		00%		00%								
'88		00%		00%		00%								
'95		00%		00%		00%								
'00		100%		00%		00%								
Total Plants/Acre (excluding Dead & Seedlings)										'82	0	Dec:	-	
										'88	0		-	
										'95	0		-	
										'00	20		-	

A G R E	Y R E	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total	
		1	2	3	4	5	6	7	8	9	1	2	3	4					
Chrysothamnus nauseosus graveolens																			
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	00	2	-	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	00	7	-	1	-	-	-	-	-	-	-	8	-	-	-	160	19	20	8
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	00	1	1	-	-	-	-	-	-	-	-	1	-	-	1	40		2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>								
'82		00%			00%			00%											
'88		00%			00%			00%											
'95		00%			00%			00%											
'00		08%			08%			08%											
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%				
												'88	0		0%				
												'95	0		0%				
												'00	240		17%				
Chrysothamnus nauseosus hololeucus																			
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	95	1	-	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	00	2	-	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	95	8	-	-	-	-	-	-	-	-	-	8	-	-	-	160	20	21	8
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	95	1	-	-	-	-	-	-	-	-	-	-	-	-	1	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>								
'82		00%			00%			00%											
'88		00%			00%			00%											
'95		00%			00%			10%			-80%								
'00		00%			00%			00%											
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%				
												'88	0		0%				
												'95	200		10%				
												'00	40		0%				

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total					
		1	2	3	4		1	2						
Chrysothamnus viscidiflorus stenophyllus														
S	82	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	20		1	
Y	82	-	-	-	-	-	-	-	-	-	0		0	
	88	2	-	-	-	-	-	-	-	-	133		2	
	95	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	0		0	
M	82	1	-	-	1	-	-	-	-	-	133	14	9	2
	88	2	-	-	-	-	-	-	-	-	133	24	15	2
	95	15	-	-	-	-	-	-	-	-	300	13	17	15
	00	14	-	-	-	-	-	-	-	-	280	8	18	14
D	82	-	-	-	-	-	-	-	-	-	0		0	
	88	1	-	-	-	-	-	-	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change						
'82		00%		00%		00%		+60%						
'88		00%		00%		20%		-10%						
'95		00%		00%		00%		- 7%						
'00		00%		00%		00%								
Total Plants/Acre (excluding Dead & Seedlings)										'82	133	Dec:	0%	
										'88	332		20%	
										'95	300		0%	
										'00	280		0%	
Gutierrezia sarothrae														
M	82	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	4	-	-	-	-	-	-	-	-	80	5	6	4
	00	1	-	-	-	-	-	-	-	-	20	-	-	1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change						
'82		00%		00%		00%								
'88		00%		00%		00%								
'95		00%		00%		00%		-75%						
'00		00%		00%		00%								
Total Plants/Acre (excluding Dead & Seedlings)										'82	0	Dec:	-	
										'88	0		-	
										'95	80		-	
										'00	20		-	

A Y G R E	Form Class (No. of Plants)	Vigor Class									Plants Per Acre	Average (inches) Ht. Cr.	Total				
		1	2	3	4	5	6	7	8	9				1	2	3	4
Leptodactylon pungens																	
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	2	-	-	-	-	-	-	-	-	-	-	-	-	40		2
	00	3	-	-	-	-	-	-	-	-	-	-	-	-	60		3
Y	82	9	-	-	-	-	-	-	-	-	9	-	-	-	600		9
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	2	-	-	1	-	-	-	-	-	3	-	-	-	60		3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	82	21	-	-	-	-	-	-	-	-	21	-	-	-	1400	1	7
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'82		00%			00%			00%									
'88		00%			00%			00%									
'95		00%			00%			00%									
'00		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'82	2000	Dec:	-		
												'88	0		-		
												'95	60		-		
												'00	0		-		
Opuntia spp.																	
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	1	-	-	-	-	-	-	-	-	-	-	1	-	66		1
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	2	1	-	-	-	-	-	-	-	-	-	3	-	200		3
	95	5	-	-	-	-	-	-	-	-	5	-	-	-	100		5
	00	5	-	-	-	-	-	2	-	-	7	-	-	-	140		7
M	82	8	-	-	-	-	-	-	-	-	8	-	-	-	533	3	7
	88	5	-	-	-	-	-	-	-	-	3	-	2	-	333	3	8
	95	40	-	-	-	-	-	-	-	-	40	-	-	-	800	5	11
	00	46	-	-	1	-	-	-	-	-	47	-	-	-	940	4	9
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	5	-	-	-	-	-	-	-	-	1	-	4	-	333		5
	95	2	-	-	-	-	-	-	-	-	-	1	-	1	40		2
	00	5	-	-	-	-	-	-	-	-	-	-	-	5	100		5
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'82		00%			00%			00%			+38%						
'88		08%			00%			69%			+ 8%						
'95		00%			00%			02%			+20%						
'00		00%			00%			08%									
Total Plants/Acre (excluding Dead & Seedlings)												'82	533	Dec:	0%		
												'88	866		38%		
												'95	940		4%		
												'00	1180		8%		

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total									
		1	2	3	4												
Pediocactus simpsonii																	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
D	82	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	-	-	1	20		1	
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change						
'82		00%			00%			00%									
'88		00%			00%			00%									
'95		00%			00%			00%									
'00		00%			00%			50%									
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%		
												'88	0		0%		
												'95	0		0%		
												'00	40		50%		
Sclerocactus																	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	0	0	2	0
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change						
'82		00%			00%			00%									
'88		00%			00%			00%									
'95		00%			00%			00%									
'00		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-		
												'88	0		-		
												'95	0		-		
												'00	0		-		

Trend Study 17-51-00

Study site name: Santaquins Cabin .

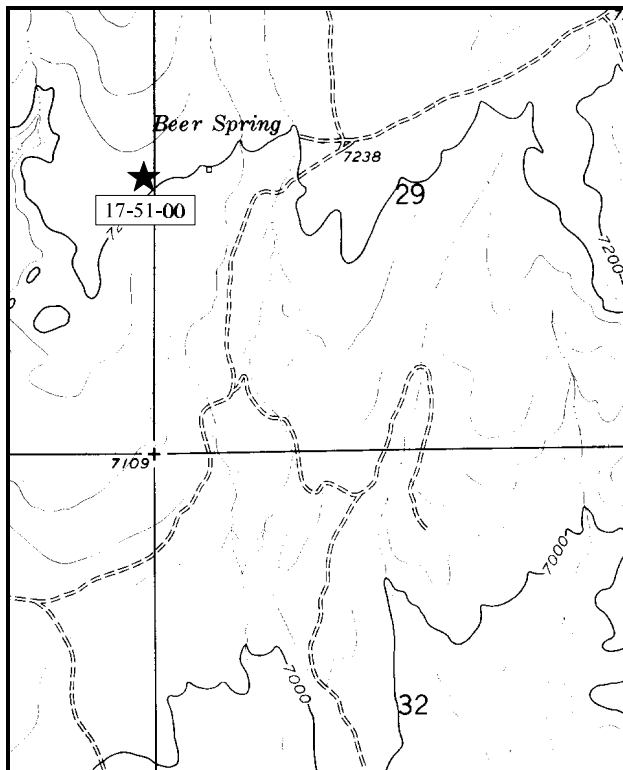
Range type: Chained, Seeded P-J .

Compass bearing: frequency baseline 159°M .

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (19 & 94ft), line 2 (29ft), line 3 (57ft), line 4 (71ft).

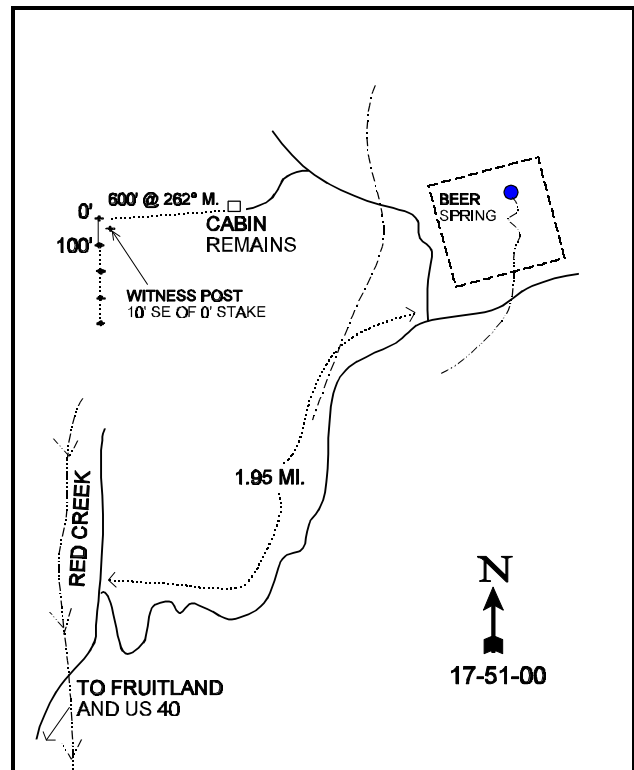
LOCATION DESCRIPTION

From US 40 in Fruitland, travel north up the Red Creek Road 1.8 miles to a 3-way fork. Take the middle fork and go 2.5 miles. After crossing Red Creek, turn right onto a dirt road. Go northeast up this road for 1.95 miles, keeping left at two major forks. At Beer Spring, turn left and go along the west side of the fenced spring to a wide, shallow wash. Cross the wash, then bear left onto a faint road. Follow it for about 100 yards to the remains of Santaquins cabin. From the cabin walk due west 600 feet, following the old line intercept study, to the 4th stake. From the 4th line-intercept stake, walk 11 paces south to the start of the baseline. The 0-foot baseline stake is marked with red browse tag #7022. The frequency baseline runs at a bearing of 159°M.



Map Name: Tabby Mountain

Township 2S ,Range 8W ,Section 29



Diagrammatic Sketch

UTM 4458484.716 N, 515236.456 E

DISCUSSION

Trend Study No. 17-51 (13-6)

This trend study is on winter range located near Santaquin's Cabin. The area is owned by the Utah Division of Wildlife Resources. The study site is placed on a chained and seeded pinyon-juniper area west of Beer Spring. Elevation is 7,200 feet and the terrain is essentially flat with a slight southeast aspect. This area is used heavily by wintering big game, especially deer. Cattle also use the area. Pellet group data from 2000 estimated 139 deer, 4 elk and 9 cow days use/acre (343 ddu/ha, 10 edu/ha and 22 cdu/ha).

Soils are fairly deep and fine textured with little rock on the surface or within the profile. Effective rooting depth is estimated at just over 11 inches due to a compacted horizon which starts about 8 inches below the surface. This does not appear to be a very restrictive rooting barrier however. Effective soil depth is variable with areas of bare soil having a soil depth of only 2 to 4 inches. Shrub interspaces generally have an effective rooting depth of 8 to 11 inches, while soil near the base of shrubs is normally 13 to 17 inches in depth. Soil texture is a sandy clay loam with a slightly alkaline soil reaction (pH of 7.7). Phosphorus is limited at just 3.3 ppm. Values less than 10 ppm can limit normal plant growth and development. There is some localized soil movement on bare areas but for the most part, erosion is minimal due to the abundant chaining litter and vegetation cover. A number of small, south flowing gullies traverse the area. These have stabilized since the chaining treatment. A disking treatment was done near the trend study and the last 150 feet of the baseline was within the disked area.

The key browse species on the chaining is Wyoming big sagebrush. There appears to be some sagebrush on the site which exhibit characteristics of basin big sagebrush (*Artemisia tridentata tridentata*) as well as hybrids of Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) and basin big sagebrush. All sagebrush will be classified as Wyoming big sagebrush in this report. Density of sagebrush has declined since 1982, but the decline is due to the reduction of young plants which numbered 2,866 plants/acre in 1982 and only 440 in 2000. The number of mature plants and decadent plants combined have remained similar through the years. Percent decadence has remained low and is currently ('00) 8%. Utilization has been moderate with 23% of the population classified as heavily hedged in 1988, 16% in 1995 and only 4% in 2000. Vigor was considered poor on 11% of the population in 1988, but by 1995 it dropped to only 2%.

Small populations of white-stemmed rubber rabbitbrush and Parry rabbitbrush produce some additional forage. There appears to have been some confusion in identifying these two shrubs during past readings. During the 2000 reading, density of Parry rabbitbrush was estimated at 1,880 plants/acre, while only 260 larger white-stemmed rubber rabbitbrush were estimated. The shorter Parry rabbitbrush average only 5 inches in height. They display light to moderate use and good vigor. Several other shrubs occur on the site in small numbers.

The herbaceous understory is diverse with 11 perennial grass species and 20 forb species sampled in 1995. Crested, thickspike, intermediate wheatgrass and a sedge dominate the grass composition by providing 83% of the total grass cover in 1995 and 88% in 2000. Forbs are diverse but they do not provide very much forage. In 1995, forbs accounted for only 25% of the herbaceous cover. Due to drought conditions, they produced only 11% of the herbaceous cover in 2000. Common forbs include: loose flower milkvetch, alfalfa, Hood's phlox and scarlet globemallow.

1982 APPARENT TREND ASSESSMENT

Soil trend appears stable. The shrub component, especially Wyoming big sagebrush, appears to be on the increase. However, browse diversity could be better. This seems to be another of those seedings where direct seeding of desirable shrubs has largely failed. Interseeding may be a viable option. Grasses and forbs are providing needed watershed protection as well as livestock forage. The highly palatable alfalfa appears to be on the way out. Vegetative trend appears stable to improving.

1988 TREND ASSESSMENT

Vegetative cover hits were rare in 1988. Basal vegetative cover decreased from 9% to 2%. Since litter cover was constant, the percentage of bare soil exposed increased. Trend for soil is considered slightly down. The permanent photo-plots associated with the study on DWR land at Santaquin's Cabin will help to document the continued succession of this chaining. From the photos, there is an obvious increase in the size and prominence of woody species although cover is still very limited in the area. For some reason, the frequency baseline was established in an area with less sagebrush than is typical over the area as a whole. Along the baseline, sagebrush cover is 1%. On the density plots, sagebrush cover averages 17%. In 1982, a large number of seedling and young big sagebrush were counted. Total sagebrush density was 5,666 plants/acre. During the 1988 reading, no seedlings were found, but there were still a substantial number of young plants. However, the total sagebrush population was only 4,399 plants/acre with a decrease in the number of mature plants counted. Correlating with the data, photograph comparisons illustrate the increased size and degree of hedging on the sagebrush. Seven percent of the mature sagebrush were classified as heavily hedged in 1982. In 1988, 21% were in form class 3. The populations of increaser species; broom snakeweed, pricklypear, juniper and pinyon have only slightly increased. Browse trend is considered slightly down. Quadrat frequency of grasses increased slightly since 1982, while frequency of forbs declined. Overall, trend is stable for the herbaceous understory.

TREND ASSESSMENT

soil - slightly down (2)

browse - slightly down (2)

herbaceous understory - stable (3)

1995 TREND ASSESSMENT

Soil conditions have improved since 1988. Cover of bare ground declined from 42% to 28%, while litter cover continues to decline as chaining litter decomposes. Trend is slightly up for soil. The key browse species, Wyoming big sagebrush, has declined in overall density due to a reduction in the number of young plants in the population caused by drought conditions over the past several years. The number of shrubs displaying heavy use declined slightly, vigor improved and the number of decadent plants declined slightly from 9% to 7% of the population. Trend is considered stable at this time. Trend for the herbaceous understory is up slightly due to an increase in the sum of nested frequency of grasses which makes up 74% of the herbaceous cover. Frequency of forbs remained similar to 1988.

TREND ASSESSMENT

soil - up slightly (4)

browse - stable (3)

herbaceous understory - up slightly (4)

2000 TREND ASSESSMENT

Trend for soil is stable. Relative cover of bare ground declined slightly while litter cover increased slightly. Vegetative cover remained similar to 1995 estimates and the ratio of protective cover (vegetation, litter, cryptogams) to bare ground remained fairly stable. Trend for the key browse species, Wyoming big sagebrush, is stable. Use is mostly light to moderate, vigor good on most plants and percent decadence remains low. Young plants currently account for 19% of the population while biotic potential (# of seedlings) is 5%. Density of mature plants has declined slightly, but this is due to the disking treatment which effected 2 of the 5 density strips. Trend for the herbaceous understory is down slightly. Sum of nested frequency of perennial grasses and forbs have declined with a significant decline in the nested frequency of crested wheatgrass.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --

Herd unit 17 , Study no: 51

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron cristatum	_{ab} 172	_b 165	_a 136	44	65	53	49	3.85	7.93
G	Agropyron dasystachyum	152	113	134	27	57	36	43	3.99	4.32
G	Agropyron intermedium	_a -	_c 86	_b 44	-	-	31	19	1.69	.93
G	Bromus inermis	_b 75	_a 43	_a 24	29	32	18	9	.78	.83
G	Carex spp.	_a -	_b 60	_b 57	1	-	19	19	1.27	2.12
G	Elymus junceus	-	6	3	-	-	2	1	.06	.15
G	Festuca ovina	_b 32	_a 3	_a -	9	15	2	-	.03	-
G	Oryzopsis hymenoides	_b 46	_c 67	_a 21	29	24	36	12	.86	.38
G	Poa secunda	-	4	1	-	-	2	1	.03	.00
G	Sitanion hystrix	11	16	10	-	6	9	5	.13	.25
G	Stipa comata	_a -	_b 22	_b 23	-	-	10	9	.22	.43
Total for Annual Grasses		0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		488	585	453	139	199	218	167	12.94	17.36
Total for Grasses		488	585	453	139	199	218	167	12.94	17.36
F	Agoseris glauca	-	-	3	-	-	-	1	-	.00
F	Antennaria rosea	-	-	1	-	-	-	1	-	.00
F	Arabis spp.	-	-	-	3	-	-	-	-	-
F	Astragalus convallarius	_a -	_b 6	_b 4	1	-	3	3	.06	.04
F	Astragalus tenellus	_b 91	_a 23	_a 13	40	38	10	7	.28	.20
F	Calochortus nuttallii	_a -	_b 8	_a -	-	-	5	-	.03	-
F	Chenopodium fremontii (a)	-	_b 13	_a -	-	-	6	-	.05	-

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	<i>Chenopodium leptophyllum</i> (a)	-	3	-	-	-	1	-	.00	-
F	<i>Cirsium</i> spp.	1	2	1	1	1	2	1	.01	.03
F	<i>Cordylanthus kingii</i> (a)	-	_b 25	_a -	-	-	13	-	.28	-
F	<i>Cryptantha</i> spp.	-	-	3	11	-	-	1	-	.03
F	<i>Cymopterus</i> spp.	-	4	-	-	-	2	-	.01	-
F	<i>Descurainia pinnata</i> (a)	-	2	-	-	-	2	-	.01	-
F	<i>Erigeron</i> spp.	3	7	8	-	1	4	3	.04	.06
F	<i>Hackelia patens</i>	-	-	-	1	-	-	-	-	-
F	<i>Hedysarum boreale</i>	-	-	4	-	-	-	3	-	.09
F	<i>Haplopappus nuttallii</i>	-	-	-	4	-	-	-	-	-
F	<i>Lappula occidentalis</i> (a)	-	_b 18	_a -	-	-	7	-	.08	-
F	<i>Machaeranthera canescens</i>	_b 21	_a 7	_a 3	47	10	3	2	.06	.04
F	<i>Machaeranthera grindelioides</i>	_b 8	_a -	_a 1	-	5	-	1	.00	.00
F	<i>Medicago sativa</i>	_b 58	_a 28	_a 25	18	25	13	14	1.70	.56
F	<i>Pedicularis</i> spp	-	-	-	1	-	-	-	-	-
F	<i>Penstemon humilis</i>	-	8	15	-	-	5	7	.07	.20
F	<i>Penstemon</i> spp.	-	4	-	8	-	1	-	.00	-
F	<i>Phlox hoodii</i>	8	14	19	4	4	8	8	.61	.43
F	<i>Phlox longifolia</i>	-	1	-	-	-	1	-	.00	-
F	<i>Polygonum douglasii</i> (a)	-	_b 10	_a -	-	-	7	-	.03	-
F	<i>Potentilla</i> spp.	-	-	-	1	-	-	-	-	-
F	<i>Schoenocrambe linifolia</i>	3	3	-	4	1	1	-	.00	-
F	<i>Senecio multilobatus</i>	3	-	-	-	1	-	-	-	-
F	<i>Sisymbrium altissimum</i> (a)	-	2	-	-	-	1	-	.00	-
F	<i>Sphaeralcea coccinea</i>	_a 24	_b 73	_b 61	13	13	31	29	.85	.37
F	<i>Taraxacum officinale</i>	-	4	-	-	-	2	-	.01	-
F	<i>Tragopogon dubius</i>	1	-	-	-	1	-	-	-	-
F	<i>Trifolium gymnocarpon</i>	_a -	_b 12	_a -	1	-	5	-	.22	-
F	<i>Viola</i> spp.	-	-	-	4	-	-	-	-	-
F	Unknown forb-perennial	_b 4	_a -	_a -	-	4	-	-	-	-
Total for Annual Forbs		0	73	0	0	0	37	0	0.47	0
Total for Perennial Forbs		225	204	161	104	104	96	81	4.00	2.08
Total for Forbs		225	277	161	104	104	133	81	4.48	2.08

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --

Herd unit 17 , Study no: 51

T y p e	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Artemisia tridentata wyomingensis	74	56	9.66	8.36
B	Atriplex canescens	0	1	-	-
B	Chrysothamnus depressus	3	6	.16	.21
B	Chrysothamnus nauseosus graveolens	0	4	-	.15
B	Chrysothamnus nauseosus hololeucus	35	11	1.16	.06
B	Chrysothamnus parryi	0	19	-	1.02
B	Chrysothamnus viscidiflorus viscidiflorus	4	2	-	-
B	Eriogonum corymbosum	3	2	.15	.15
B	Gutierrezia sarothrae	13	15	.24	.24
B	Juniperus osteosperma	0	4	-	.03
B	Leptodactylon pungens	4	3	.15	.15
B	Opuntia spp.	6	8	.00	.18
B	Pediocactus simpsonii	1	0	.00	-
B	Pinus edulis	0	3	-	-
Total for Browse		143	134	11.54	10.57

BASIC COVER --

Herd unit 17 , Study no: 51

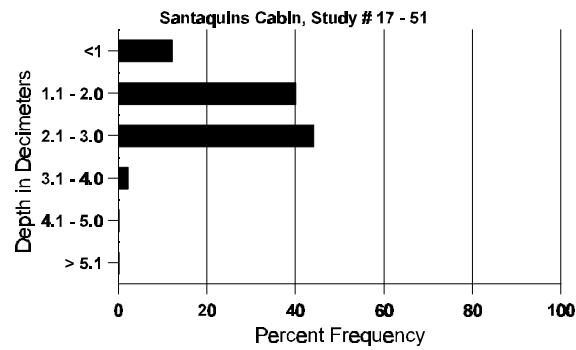
Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	347	314	8.50	2.25	29.18	35.20
Rock	19	9	0	.25	.04	.02
Pavement	61	112	0	0	.14	.80
Litter	393	383	56.00	55.75	44.87	59.80
Cryptogams	60	56	0	0	1.22	1.00
Bare Ground	280	274	35.50	41.75	27.60	32.01

SOIL ANALYSIS DATA --

Herd Unit 17, Study # 51, Study Name: Santaquins Cabin

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
11.62	55.6 (12.76)	7.37	49.6	27.1	23.3	3.0	3.3	134.4	0.8

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 51

Type	Quadrat Frequency	
	'95	'00
Rabbit	18	24
Elk	6	2
Deer	47	55
Cattle	-	4

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
00	00
400	N/A
52	4 (10)
1801	139 (343)
104	9 (22)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 51

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total									
		1	2	3	4												
Artemisia tridentata wyomingensis																	
S	82	83	-	-	-	-	-	-	-	83	-	-	-	5533		83	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	1	-	-	-	-	-	-	-	1	-	-	-	20		1	
	00	6	-	-	-	-	-	-	-	6	-	-	-	120		6	
Y	82	43	-	-	-	-	-	-	-	43	-	-	-	2866		43	
	88	9	17	6	-	-	-	-	-	32	-	-	-	2133		32	
	95	24	2	-	-	-	-	-	-	26	-	-	-	520		26	
	00	22	-	-	-	-	-	-	-	22	-	-	-	440		22	
M	82	28	11	3	-	-	-	-	-	37	5	-	-	2800	20 20	42	
	88	5	17	6	-	-	-	-	-	24	-	4	-	1866	22 23	28	
	95	39	57	18	1	-	-	-	-	115	-	-	-	2300	33 38	115	
	00	48	34	2	1	-	-	-	-	85	-	-	-	1700	18 24	85	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	1	2	3	-	-	-	-	-	3	-	3	-	400		6	
	95	-	5	6	-	-	-	-	-	8	-	-	3	220		11	
	00	3	3	3	-	-	-	-	-	4	-	-	5	180		9	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	320		16	
	00	-	-	-	-	-	-	-	-	-	-	-	-	240		12	
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change									
'82		13%		04%		00%		-22%									
'88		55%		23%		11%		-31%									
'95		42%		16%		02%		-24%									
'00		32%		04%		04%											
Total Plants/Acre (excluding Dead & Seedlings)										'82	5666	Dec:	0%				
										'88	4399		9%				
										'95	3040		7%				
										'00	2320		8%				
Atriplex canescens																	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	1	-	-	-	-	-	-	-	1	-	-	-	20	32	32	1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change									
'82		00%		00%		00%											
'88		00%		00%		00%											
'95		00%		00%		00%											
'00		00%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)										'82	0	Dec:	-				
										'88	0		-				
										'95	0		-				
										'00	20		-				

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus depressus																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	95	15	-	-	-	-	-	-	-	-	15	-	-	300	6	15	15	
	00	5	5	2	-	-	-	-	-	-	12	-	-	240	1	5	12	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	20			1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%			-13%							
'00		38%			15%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	0		0%			
												'95	300		0%			
												'00	260		8%			
Chrysothamnus nauseosus graveolens																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	00	2	-	-	-	-	-	-	-	-	2	-	-	40	23	23	2	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	2	-	-	-	-	-	-	-	-	1	-	-	40			2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			25%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	0		0%			
												'95	0		0%			
												'00	80		50%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus nauseosus hololeucus																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	2	-	1	-	-	-	-	-	-	2	-	1	200			3	
	95	11	-	-	-	-	-	-	-	-	11	-	-	220			11	
	00	3	1	-	-	-	-	-	-	-	4	-	-	80			4	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	95	108	-	-	-	-	-	-	-	-	108	-	-	2160	14	14	108	
	00	9	-	-	-	-	-	-	-	-	7	-	2	180	17	18	9	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			33%			33%			+92%							
'95		00%			00%			00%			-89%							
'00		08%			00%			15%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	200		-			
												'95	2380		-			
												'00	260		-			
Chrysothamnus parryi																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	2	-	-	-	-	-	-	-	-	2	-	-	40			2	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	00	51	40	1	-	-	-	-	-	-	92	-	-	1840	5	8	92	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		43%			01%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	1880		-			

A Y G R E	Form Class (No. of Plants)	Vigor Class									Plants Per Acre	Average (inches)		Total			
		1	2	3	4	5	6	7	8	9		1	2		3	4	Ht.
Chrysothamnus viscidiflorus viscidiflorus																	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	1	-	-	-	-	-	-	-	-	-	1	-	-	20		1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	82	1	-	-	-	-	-	-	-	-	-	1	-	-	66	6	10
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
	95	3	-	-	-	-	-	-	-	-	-	3	-	-	60	11	15
	00	1	-	-	-	-	-	-	-	-	-	1	-	-	20	-	-
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'82		00%			00%			00%									
'88		00%			00%			00%									
'95		00%			00%			00%			-50%						
'00		00%			00%			50%									
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	0%		
												'88	0		0%		
												'95	80		0%		
												'00	40		50%		
Eriogonum corymbosum																	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	1	-	-	-	-	-	-	-	-	-	1	-	-	20		1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	82	1	-	-	-	-	-	-	-	-	-	-	1	-	66	15	16
	88	1	-	-	-	-	-	-	-	-	-	1	-	-	66	15	13
	95	3	-	-	-	-	-	-	-	-	-	3	-	-	60	16	30
	00	3	-	-	-	-	-	-	-	-	-	3	-	-	60	16	20
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'82		00%			00%			00%			+ 0%						
'88		00%			00%			00%			+18%						
'95		00%			00%			00%			-25%						
'00		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	-		
												'88	66		-		
												'95	80		-		
												'00	60		-		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Gutierrezia sarothrae																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	3	-	-	-	-	-	-	-	-	3	-	-	-	200	6	9	3
	95	32	-	-	-	-	-	-	-	-	32	-	-	-	640	9	11	32
	00	42	-	-	-	-	-	-	-	-	42	-	-	-	840	4	6	42
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%			+71%							
'95		00%			00%			00%			+21%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	200		-			
												'95	680		-			
												'00	860		-			
Juniperus osteosperma																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	66		-			
												'95	0		-			
												'00	80		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Leptodactylon pungens																		
M	82	8	-	-	-	-	-	-	-	-	8	-	-	-	533	2	7	8
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	8	-	-	-	-	-	-	-	-	8	-	-	-	160	6	7	8
	00	12	-	-	-	-	-	-	-	-	12	-	-	-	240	3	6	12
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%			+33%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	533	Dec:	-			
												'88	0		-			
												'95	160		-			
												'00	240		-			
Opuntia spp.																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	82	14	-	-	-	-	-	-	-	-	14	-	-	-	933	3	13	14
	88	21	-	-	-	-	-	-	-	-	21	-	-	-	1400	3	4	21
	95	6	-	-	-	-	-	-	-	-	6	-	-	-	120	6	14	6
	00	7	-	-	-	-	-	-	-	-	7	-	-	-	140	4	12	7
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+39%							
'88		00%			00%			00%			-92%							
'95		00%			00%			00%			+45%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	933	Dec:	0%			
												'88	1533		0%			
												'95	120		0%			
												'00	220		9%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Pediocactus simpsonii																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20	1	2	1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	20		-			
												'00	0		-			
Pinus edulis																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	66		-			
												'95	0		-			
												'00	60		-			
Tetradymia canescens																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14	12	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	0		-			

Trend Study 17-52-00

Study site name: Cutoff.

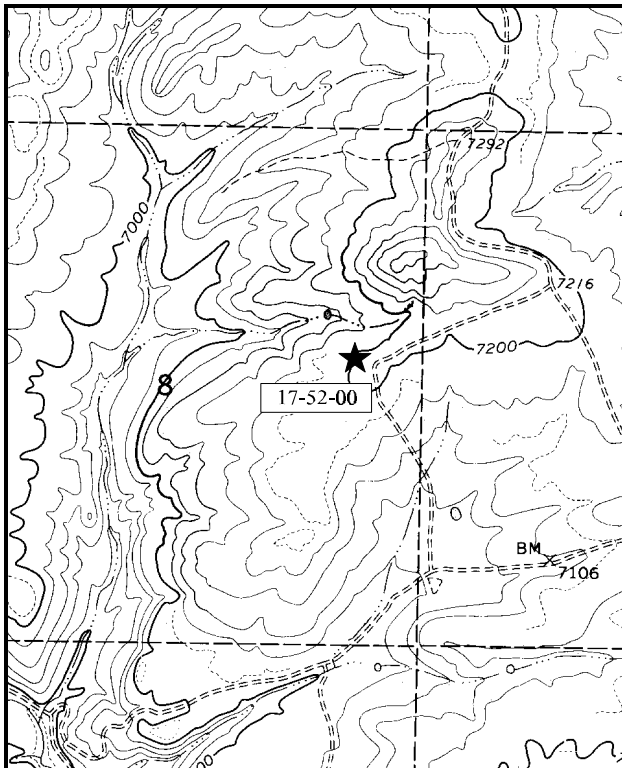
Range type: Big Sagebrush-Grass .

Compass bearing: frequency baseline 179°M.

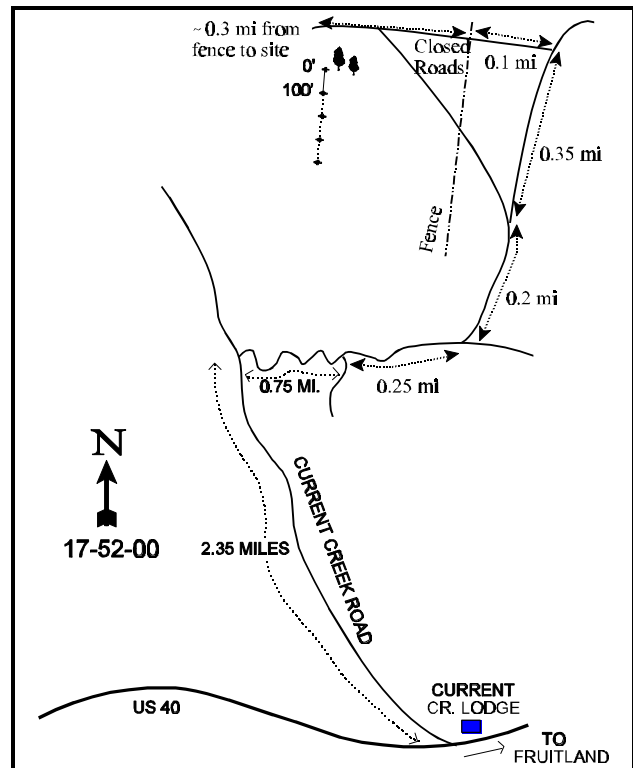
Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (6 & 90ft), line 2 (26ft), line 3 (57ft), line 4 (69ft).

LOCATION DESCRIPTION

From the intersection of Currant Creek Road and Highway U.S. 40, drive north on the Currant Creek Road for 2.3 miles. Turn right and go east 0.7 miles to an intersection. Turn left and drive north for 0.3 miles to a "T". At the "T", turn left and go 0.2 miles to a fork. Stay right for another 0.35 miles to another fork. Turn left and drive to the fence. Cross the fence and walk to the end of the road (about a third of a mile) to the west. The 0-foot baseline is 100 feet south of the end of the road. The 0-foot stake is about 30 feet north east of a mature pinyon pine.

Map Name: Deep Creek Canyon

Township 3S, Range 9W, Section 8



Diagrammatic Sketch

UTM 4453656.792 N, 506989.537 E

DISCUSSION

Trend Study No. 17-52 (13-7)

The Cutoff trend study is on Division of Wildlife Resources land which is classified as winter range. The area is immediately north of Currant Creek Lodge. The range type is sagebrush-grass with some mountain brush. Slope varies from 10% to 20% on a west aspect. Elevation is approximately 7,200 feet. Pellet group frequency data indicates the area is used heavily by deer. A pellet group transect read along the study site baseline in 2000 estimated 96 deer and 8 elk days use/acre (237 ddu/ha and 20 edu/ha). A few deer pellet groups appear to be from spring, but most are from winter use. There is also some sign of cattle grazing with all cattle pats sampled appearing to be from last year (1999).

Soils appear fairly deep but variable. Effective rooting depth is estimated at nearly 14 inches. There is little rock on the surface or within the profile. However, there are some exposed boulders near the beginning and end of the baseline. Overall soil depth is quite variable with deep soil penetrometer measurements of nearly 20 inches occurring near shrubs, while effective soil depth within the shrub interspaces is only 6 to 7 inches. Some areas also contain a calcium carbonate hardpan. Soil texture is a sandy loam with a neutral soil reaction (pH of 7.2). Phosphorus is limited at 5.9 ppm where values less than 10 ppm can limit normal plant growth and development. There is some erosion occurring especially on the steeper slopes near the beginning of the study baseline. There is evidence of past erosion in the form of soil pedestaling and gully formation. However, there appears to be sufficient protective ground cover to prevent serious erosion. On nearby steeper slopes, erosion is more serious and widespread than on the study site.

The key browse species is mountain big sagebrush which provided 74% of the browse cover in 1995 and 55% in 2000. There are also a variety of other browse species present including: serviceberry, true mountain mahogany, mountain low rabbitbrush and bitterbrush. Density for mountain big sagebrush was estimated at 1,866 plants/acre in 1982. Use was mostly light, vigor was good and percent decadency was 21%. By 1988, density increased to 2,199 plants/acre, but percent decadency rose to 70%. Use was light to moderate. This increase in decadency is the result of an over mature population, interspecific competition, combined with drought. During the 1995 reading, population density was estimated at 3,000 plants/acre. Use was heavy on 47% of the population and vigor was reduced on 21%. However, percent decadency declined to 39%. In 2000, density appeared fairly stable at 2,980 plants/acre. Use is very similar to 1995 levels with 53% of the plants sampled displaying heavy use (>60% of twigs browsed). Percent decadence has increased slightly to 45%. Seedlings are rare and young plants account for only 5% of the population. Drought conditions are affecting all of the shrubs on this site in 2000. Most shrubs produced little seed and limited annual growth.

Other preferred browse, serviceberry and true mountain mahogany, occur in small numbers but provide additional forage. Serviceberry shows mostly light hedging, but some mature individuals currently ('00) display heavy use. Mahogany has shown mostly moderate use during past readings. But now it shows mostly heavy utilization. Currently ('00), dwarf rabbitbrush shows moderate to heavy use while mountain low rabbitbrush is mostly unutilized.

Grasses and forbs combine to produce 60% of the vegetative cover in 1995 and 65% in 2000. Perennial grasses are diverse with thickspike wheatgrass, needle-and-thread, bluebunch wheatgrass, Indian ricegrass and mutton bluegrass being the most abundant. Forbs are abundant, but few useful species are present. Timber poisonvetch, king birdbeak and Hood's phlox produced 63% of the forb cover in 1995. Currently ('00), pussytoes, timber poisonvetch and Hood's phlox provide 81% of the forb cover.

1982 APPARENT TREND ASSESSMENT

Soil trend appears to be stable to declining. Soil movement, while not rapid, is still a long-term problem. Vegetation trend also appears to be in a state of decline, which could be reversed in a relatively short time. The most obvious problems involve browse composition and age structure and vigor of the key species. Prior to Division of Wildlife Resources acquisition in 1981, the area had been grazed by livestock during the summer and fall. A spring grazing program designed to enhance the browse component might prove beneficial if the increaser shrubs currently present can be held in check or even reduced.

1988 TREND ASSESSMENT

There was an increase in percent bare ground from 39% to 46%. Litter cover also declined but basal vegetative cover increased slightly and frequency of herbaceous vegetation increased. There is continued gully erosion evident on the site, but other soil trend indicators appear stable. Trend for soil is considered stable but in poor condition. A variety of browse are available, but mountain big sagebrush is the key and most abundant species. Density of sagebrush has increased slightly but so have the less desirable rabbitbrush species. For the sagebrush however, the most important change is in the age class composition. The mostly mature sagebrush population found in 1982 is now 70% decadent, not unusual for 1988. There are few young plants. The sagebrush is lightly to moderately hedged. Sagebrush cover averages 12%. The more palatable, but less common, shrubs such as true mountain mahogany, serviceberry and bitterbrush are also only lightly to moderately hedged. Although poorly sampled due to low numbers, more individuals of these species were counted in 1988 and all are vigorous. Young shrubs are common. Trend for browse is slightly down. In the understory, frequency of grasses and forbs has increased. Trend for grasses and forbs is slightly up.

TREND ASSESSMENT

soil - stable but in poor condition (3)

browse - slightly down due to increased decadency and reduced vigor of sagebrush (2)

herbaceous understory - slightly up (4)

1995 TREND ASSESSMENT

The soil trend is slightly up. The amount of exposed bare soil is down from 46% to 34%. Litter cover continued to decline slightly, but cover of cryptogamic crusts increased to over 5%. There are currently no active gullies on the site, but signs of past soil movement such as pedestaling are evident. Trend for browse is mixed for the key species, mountain big sagebrush. The number of mature plants is similar to that found in 1982 (1,400 to 1,340 plants/acre) and the number of decadent plants declined from 70% to 39%. On the negative side, heavy use increased. No heavy use was reported on sagebrush in 1982 or 1988. During the 1995 reading, 56% of the mature and decadent shrubs displayed heavy hedging. Those plants classified with poor vigor equaled 21%. In addition, 54% of the decadent plants (640 plants/acre) were classified as dying. Dead plants numbered 920 plants/acre indicating a die off in the past few years. Few seedlings are found, yet young plants are moderately abundant. It appears that the population may decline in the future but the resulting population will be younger, showing better health as long as use is not too extreme. Trend for browse is considered stable at this time. Trend for the herbaceous understory is slightly up with an increase in the sum of nested frequency of perennial grasses and forbs. Nested frequency of thickspike wheatgrass increased significantly while frequency of Indian ricegrass declined significantly. Overall, nested frequency of perennial grasses increased by 18%. Nested frequency for perennial forbs increased by 11%.

TREND ASSESSMENT

soil - slightly up (4)

browse - stable (3)

herbaceous understory - slightly up (4)

2000 TREND ASSESSMENT

Trend for soil is stable. Relative percent cover of bare ground and litter are unchanged, while vegetation cover has increased and cryptogamic cover has declined. Overall, the ratio of protective ground cover (vegetation, litter and cryptogams) to bare ground has remained stable since 1995. Trend for the key browse species, mountain big sagebrush, is stable at this time. Use is similar to 1995 levels. Percent decadence is still relatively high at 45% but a smaller proportion are classified as dying (54% in 1995 and 27% in 2000). Reproduction is marginal with few seedlings encountered and young plants accounting for only 5% of the population. If recruitment does not improve, the population will likely decline. A return to normal precipitation patterns will do much to improve sagebrush health and reproduction. Trend for the herbaceous understory is slightly down. Sum of nested frequency of perennial grasses and forbs have declined by 10% and 14% respectively since 1995. Nested frequency of thickspike wheatgrass declined significantly while only about one-third of the grasses remained fairly stable. Nested frequency of perennial forbs declined slightly while nested frequency of annual forbs declined dramatically due to the dry conditions of 2000 (287 to 11).

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --

Herd unit 17 , Study no: 52

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	_a 181	_b 203	_a 163	54	67	70	61	2.23	2.68
G	Agropyron spicatum	_a -	_b 32	_b 46	-	-	11	13	1.14	1.20
G	Bromus tectorum (a)	-	3	3	-	-	1	1	.00	.00
G	Carex spp.	_a 3	_b 46	_b 44	-	1	20	17	.27	.29
G	Elymus salina	_a 39	_b 67	_a 21	-	13	27	10	.99	.82
G	Oryzopsis hymenoides	_b 145	_a 79	_a 67	48	58	33	28	1.20	1.80
G	Poa fendleriana	_b 148	_b 118	_a 8	15	59	49	4	1.35	.21
G	Poa secunda	_a -	_b 7	_c 199	5	-	3	81	.01	6.15
G	Sitanion hystrix	-	1	-	-	-	1	-	.00	-
G	Stipa comata	_a -	_c 74	_b 14	14	-	29	5	2.25	.42
Total for Annual Grasses		0	3	3	0	0	1	1	0.00	0.00
Total for Perennial Grasses		516	627	562	136	198	243	219	9.48	13.59
Total for Grasses		516	630	565	136	198	244	220	9.48	13.60

T y p e	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	Agoseris glauca	-	3	-	-	-	2	-	.01	-
F	Allium spp.	a-	b104	a-	-	-	45	-	.45	-
F	Antennaria rosea	68	48	60	18	30	21	21	.52	2.10
F	Androsace septentrionalis (a)	-	b35	a-	-	-	13	-	.14	-
F	Arabis spp.	6	5	9	3	4	5	5	.02	.22
F	Artemisia dracunculus	-	-	2	-	-	-	1	-	.00
F	Astragalus convallarius	a83	b139	b122	43	35	59	53	3.79	3.19
F	Astragalus spp.	4	3	8	2	2	2	3	.62	.44
F	Castilleja chromosa	a4	a4	b23	-	2	3	11	.07	.27
F	Calochortus nuttallii	-	3	2	-	-	1	1	.01	.00
F	Chaenactis douglasii	25	9	7	15	12	5	5	.02	.02
F	Chenopodium fremontii (a)	-	b6	a-	-	-	3	-	.01	-
F	Chenopodium leptophyllum (a)	-	b11	a-	-	-	6	-	.03	-
F	Cirsium spp.	2	-	2	-	1	-	1	-	.00
F	Cordylanthus kingii (a)	-	b81	a-	-	-	39	-	2.25	-
F	Collinsia parviflora (a)	-	b62	a-	-	-	25	-	.22	-
F	Crepis acuminata	a-	b9	ab2	-	-	5	1	.19	.00
F	Cryptantha spp.	b3	a-	a-	-	3	-	-	-	-
F	Cymopterus spp.	a-	b24	a4	-	-	13	1	.07	.00
F	Descurainia spp. (a)	-	b10	a-	-	-	4	-	.07	-
F	Eriogonum cernuum (a)	-	3	-	-	-	1	-	.01	-
F	Erigeron pumilus	a36	a27	b85	19	18	14	38	.07	.51
F	Gayophytum ramosissimum (a)	-	b7	a-	-	-	3	-	.06	-
F	Hedysarum boreale	a-	b30	a4	-	-	12	2	.61	.01
F	Lappula occidentalis (a)	-	b19	a-	-	-	10	-	.05	-
F	Lithospermum ruderales	1	3	2	-	1	2	1	.03	.03
F	Machaeranthera canescens	b151	a19	a12	51	66	11	6	.08	.08
F	Orthocarpus tolmiei (a)	-	-	3	20	-	-	1	-	.00
F	Penstemon spp.	-	2	1	9	-	1	1	.00	.01
F	Phlox hoodii	b142	a108	ab131	45	64	48	55	1.58	3.62
F	Phlox longifolia	a-	b30	b15	-	-	14	7	.12	.03
F	Polygonum douglasii (a)	-	b53	a8	-	-	22	3	.13	.04
F	Schoenocrambe linifolia	-	5	3	-	-	2	1	.01	.00
F	Senecio multilobatus	-	-	6	-	-	-	2	-	.03
F	Sphaeralcea coccinea	b55	a31	ab32	21	24	14	15	.45	.23
F	Tragopogon spp.	-	-	-	2	-	-	-	-	-
F	Trifolium gymnocarpon	a5	c50	b29	-	2	22	12	.24	.13

T y p e	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
	Total for Annual Forbs	0	287	11	20	0	126	4	3.00	0.04
	Total for Perennial Forbs	585	656	561	228	264	301	243	9.00	10.99
	Total for Forbs	585	943	572	248	264	427	247	12.00	11.04

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --

Herd unit 17 , Study no: 52

T y p e	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Amelanchier alnifolia	16	19	.82	2.40
B	Artemisia tridentata vaseyana	78	70	10.52	7.12
B	Ceratoides lanata	0	4	-	-
B	Cercocarpus montanus	7	8	.56	.68
B	Chrysothamnus depressus	28	29	1.13	.61
B	Chrysothamnus viscidiflorus lanceolatus	37	31	.31	.78
B	Eriogonum corymbosum	18	18	.30	.27
B	Opuntia fragilis	15	8	.14	.19
B	Pediocactus simpsonii	0	5	-	-
B	Tetradymia canescens	6	4	.33	.76
	Total for Browse	205	196	14.14	12.83

BASIC COVER --

Herd unit 17 , Study no: 52

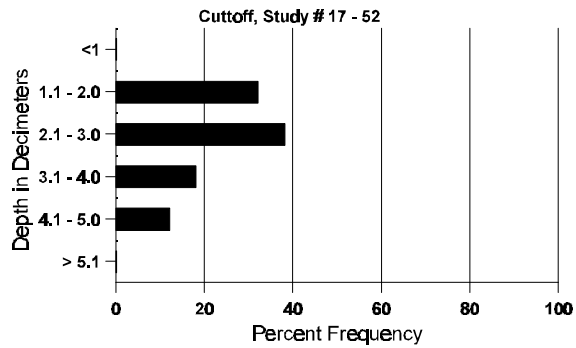
Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	353	350	11.50	13.00	32.34	37.61
Rock	14	26	.75	1.25	.20	.89
Pavement	91	99	.75	.25	.26	.62
Litter	389	367	45.00	38.50	35.52	40.88
Cryptogams	149	116	2.75	1.00	5.24	1.69
Bare Ground	326	336	39.25	46.00	34.07	38.95

SOIL ANALYSIS DATA --

Herd Unit 17, Study # 52, Study Name: Cutoff

Effective rooting depth (inches)	Temp °F (depth)	pH	% sand	% silt	% clay	% OM	PPM P	PPM K	dS/m
13.75	61.6 (14.57)	7.2	61.4	19.0	19.6	1.8	5.9	131.2	0.7

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 52

Type	Quadrat Frequency	
	'95	'00
Rabbit	25	38
Elk	3	14
Deer	44	33
Cattle	-	-

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
00	00
339	N/A
104	8 (20)
1244	96 (236)
35	3 (7)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 52

Herb Unit 17, Study No. 52																		
A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Amelanchier alnifolia																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	5	-	-	1	-	-	-	-	-	6	-	-	-	400		6	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	7	-	-	-	-	-	-	-	-	7	-	-	-	140		7	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	3	-	-	-	-	-	-	-	-	3	-	-	-	200		3	
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
	00	12	-	-	1	-	-	1	-	-	14	-	-	-	280		14	
M	82	-	2	-	-	-	-	-	-	-	-	2	-	-	133	16 22	2	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
	95	5	6	-	2	-	-	-	-	-	13	-	-	-	260	22 26	13	
	00	3	-	2	1	1	2	2	-	-	11	-	-	-	220	28 31	11	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	-	-	-	1	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		100%			00%			00%			+34%							
'88		00%			00%			00%			+38%							
'95		38%			00%			00%			+38%							
'00		04%			15%			04%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	133	Dec:	0%			
												'88	200		0%			
												'95	320		0%			
												'00	520		4%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata vaseyana																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	00	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
Y	82	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	95	21	3	-	-	-	-	-	-	-	24	-	-	-	480		24	
	00	5	1	-	-	2	-	-	-	-	6	-	-	2	160		8	
M	82	14	7	-	-	-	-	-	-	-	15	6	-	-	1400	18	26	
	88	3	5	-	-	-	-	-	-	-	8	-	-	-	533	18	23	
	95	10	25	31	1	-	-	-	-	-	67	-	-	-	1340	20	34	
	00	10	27	25	-	-	11	1	-	-	74	-	-	-	1480	20	33	
D	82	-	6	-	-	-	-	-	-	-	5	1	-	-	400		6	
	88	15	8	-	-	-	-	-	-	-	15	-	-	8	1533		23	
	95	4	13	40	1	1	-	-	-	-	27	-	-	32	1180		59	
	00	13	7	33	-	4	10	-	-	-	48	-	1	18	1340		67	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	920		46	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	620		31	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		46%			00%			00%			+15%							
'88		39%			00%			24%			+27%							
'95		28%			47%			21%			- 1%							
'00		28%			53%			14%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	1866	Dec:	21%			
												'88	2199		70%			
												'95	3000		39%			
												'00	2980		45%			
Ceratoides lanata																		
M	82	1	-	-	-	-	-	-	-	-	1	-	-	-	66	14	9	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	8	
	00	1	4	-	-	-	-	-	-	-	5	-	-	-	100	7	6	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	1	-	-	-	-	-	-	-	-	-	-	1	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		83%			00%			17%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	0%			
												'88	0		0%			
												'95	0		0%			
												'00	120		17%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Cercocarpus montanus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	1	-	-	-	-	-	-	-	-	1	-	-	66			1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	6	-	-	-	-	-	-	-	6	-	-	400			6	
	95	1	-	-	-	-	-	-	-	-	1	-	-	20			1	
	00	-	1	-	-	-	-	-	-	-	1	-	-	20			1	
M	82	-	3	-	-	-	-	-	-	-	-	3	-	200	20	19	3	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	95	7	5	-	-	-	-	-	-	-	12	-	-	240	22	31	12	
	00	-	-	6	-	2	3	-	-	-	11	-	-	220	32	32	11	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	-	-	-	-	-	1	-	-	-	-	-	1	20			1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		100%			00%			00%			+50%							
'88		100%			00%			00%			-35%							
'95		38%			00%			00%			+ 0%							
'00		23%			77%			08%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	200	Dec:	0%			
												'88	400		0%			
												'95	260		0%			
												'00	260		8%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus depressus																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	8	-	-	1	-	-	-	-	-	9	-	-	-	600	3	6	9
	95	123	-	-	-	-	-	-	-	-	123	-	-	-	2460	6	11	123
	00	57	24	22	2	16	2	-	-	-	123	-	-	-	2460	5	10	123
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	-	-	-	1	20		1	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%			+74%							
'95		00%			00%			00%			- 2%							
'00		32%			19%			.80%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	666		0%			
												'95	2520		0%			
												'00	2480		1%			
Chrysothamnus nauseosus																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	7	15	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	0		-			

A Y G R E	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3		4	Ht.	
Chrysothamnus viscidiflorus lanceolatus																	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	5	-	-	-	-	-	-	-	-	5	-	-	333			5
	95	6	-	-	-	-	-	-	-	-	6	-	-	120			6
	00	1	-	-	-	-	-	-	-	-	1	-	-	20			1
M	82	23	-	-	-	-	-	-	-	-	23	-	-	1533	12	15	23
	88	36	-	-	1	-	-	-	-	-	37	-	-	2466	8	8	37
	95	62	-	-	6	-	-	-	-	-	68	-	-	1360	11	14	68
	00	73	4	-	4	-	-	-	-	-	80	-	1	1620	9	13	81
D	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	3	-	-	2	-	-	-	-	-	3	-	-	333			5
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	60			3
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>			
'82		00%				00%				00%				+51%			
'88		00%				00%				04%				-53%			
'95		00%				00%				00%				+10%			
'00		05%				00%				01%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	1533	Dec:	0%		
												'88	3132		11%		
												'95	1480		0%		
												'00	1640		0%		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Eriogonum corymbosum																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	2	-	-	-	-	-	-	-	-	-	2	-	-	40		2	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	5	-	-	-	-	-	-	-	-	5	-	-	333			5	
	95	8	-	-	-	-	-	-	-	-	8	-	-	160			8	
	00	5	-	-	-	-	-	-	-	-	5	-	-	100			5	
M	82	11	-	-	-	-	-	-	-	-	11	-	-	733	17	15	11	
	88	2	-	-	-	-	-	-	-	-	2	-	-	133	13	11	2	
	95	32	-	-	-	-	-	-	-	-	32	-	-	640	13	18	32	
	00	14	4	-	1	-	-	-	-	-	19	-	-	380	11	15	19	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	4	-	-	-	-	-	-	-	-	4	-	-	266			4	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	12	-	-	-	-	-	-	-	-	11	-	-	240			12	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			- 0%							
'88		00%			00%			00%			+ 9%							
'95		00%			00%			00%			-10%							
'00		11%			00%			03%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	733	Dec:	0%			
												'88	732		36%			
												'95	800		0%			
												'00	720		33%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Opuntia fragilis																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	8	-	-	-	-	-	-	-	-	-	-	-	-	533		8	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	5	-	-	-	-	-	-	-	-	-	-	-	-	333		5	
	95	3	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	82	3	-	-	-	-	-	-	-	-	-	-	-	-	200	3	5	
	88	4	-	-	-	-	-	3	-	-	-	-	-	-	466	1	2	
	95	13	-	-	-	-	-	-	-	-	-	-	-	-	260	4	11	
	00	20	-	-	-	-	-	-	-	-	-	-	-	-	400	2	6	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	3	-	-	-	-	-	-	-	-	-	-	-	-	200		3	
	95	1	-	-	-	-	-	-	-	-	-	-	1	-	20		1	
	00	-	1	-	-	-	-	-	-	-	-	-	1	-	20		1	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+80%							
'88		00%			00%			00%			-66%							
'95		00%			00%			06%			+19%							
'00		05%			00%			05%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	200	Dec:	0%			
												'88	999		20%			
												'95	340		6%			
												'00	420		5%			
Pediocactus simpsonii																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	00	7	-	-	-	-	-	-	-	-	-	-	-	-	140	1	2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	140		-			

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches)		Total					
		1	2	3	4		Ht.	Cr.						
Purshia tridentata														
M	82	-	1	-	-	-	-	-	-	-	-	1		
	88	1	1	-	-	-	-	-	-	-	2	2		
	95	-	-	-	-	-	-	-	-	-	0	0		
	00	-	-	-	-	-	-	-	-	-	0	0		
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change						
'82		100%		00%		00%		+50%						
'88		50%		00%		00%								
'95		00%		00%		00%								
'00		00%		00%		00%								
Total Plants/Acre (excluding Dead & Seedlings)											'82	66	Dec:	-
											'88	133		-
											'95	0		-
											'00	0		-
Symphoricarpos oreophilus														
M	82	-	-	-	-	-	-	-	-	-	0	0		
	88	-	-	-	-	-	-	-	-	-	0	0		
	95	-	-	-	-	-	-	-	-	-	0	0		
	00	-	-	-	-	-	-	-	-	-	0	0		
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change						
'82		00%		00%		00%								
'88		00%		00%		00%								
'95		00%		00%		00%								
'00		00%		00%		00%								
Total Plants/Acre (excluding Dead & Seedlings)											'82	0	Dec:	-
											'88	0		-
											'95	0		-
											'00	0		-
Tetradymia canescens														
M	82	3	-	-	-	-	-	-	-	-	3	3		
	88	1	-	-	-	-	-	-	-	-	66	1		
	95	6	1	-	-	-	-	-	-	-	140	7		
	00	3	-	-	-	1	-	-	-	-	80	4		
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change						
'82		00%		00%		00%		-67%						
'88		00%		00%		00%		+53%						
'95		14%		00%		00%		-43%						
'00		25%		00%		00%								
Total Plants/Acre (excluding Dead & Seedlings)											'82	200	Dec:	-
											'88	66		-
											'95	140		-
											'00	80		-

Trend Study 17-53-00

Study site name: Two Bar Ranch.

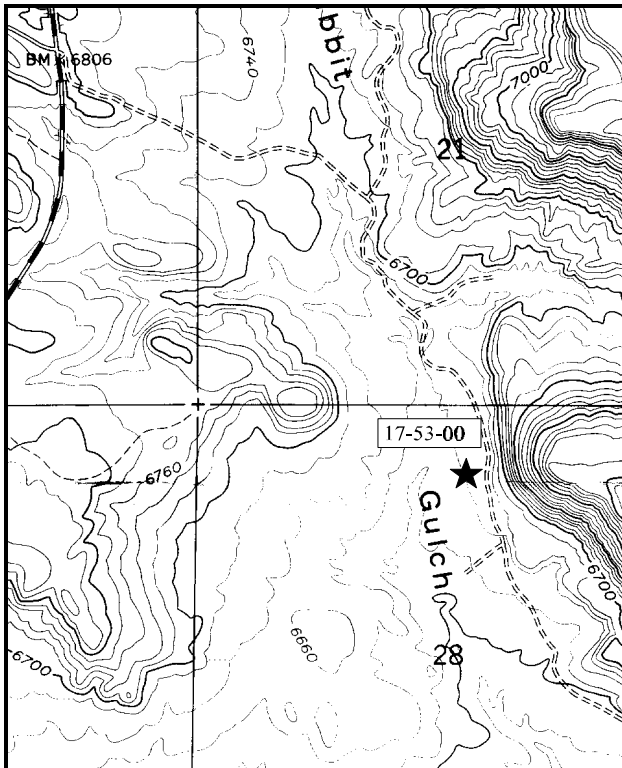
Range type: Big Sagebrush-Grass.

Compass bearing: frequency baseline 345°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (9 & 85ft), line 2 (26ft), line 3 (45ft), line 4 (60ft).

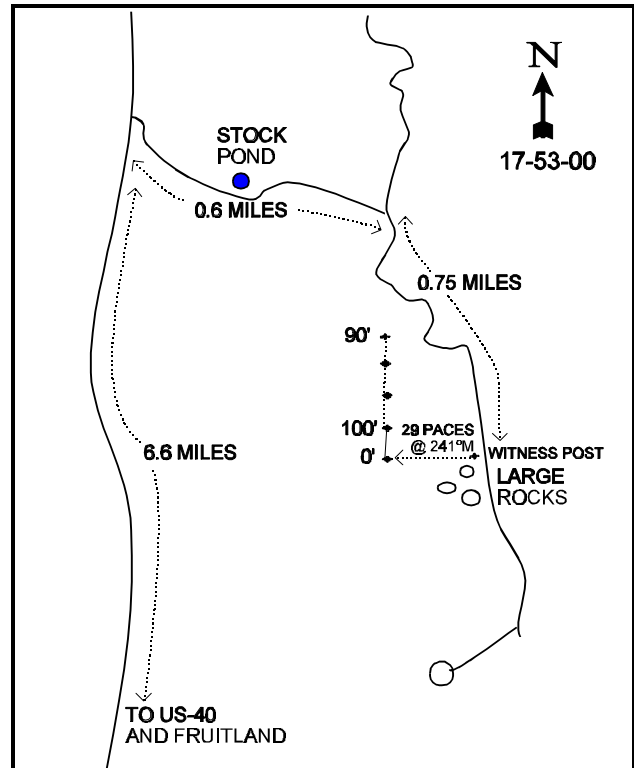
LOCATION DESCRIPTION

From U.S. 40 five miles east of Fruitland, take Rt. 208 north towards Tabiona for 6.6 miles. Just after a small road cut, there is a road on the right. Turn right towards Rabbit Gulch and go 0.75 miles to an intersection. Turn right (south) and go another 0.75 miles down a gully-ridden road to two large rocks on the west side of the road. From the highest point of the first rock, the 0-foot baseline stake is 25 paces away bearing 241°M. The baseline runs to the north.



Map Name: Tabiona

Township 2S, Range 7W, Section 28



Diagrammatic Sketch

UTM 4459012.357 N, 527294.400 E

DISCUSSION

Trend Study No. 17-53 (13-8)

The Two Bar Ranch study is located on the upper part of Rabbit Gulch near the base of Blacktail Ridge. The study is within a large sagebrush flat with a gentle (5%) slope and an aspect to the west. Elevation is approximately 6,580 feet. This is the lowest elevation for a trend study on the unit. Thermal and escape cover for big game is limited within the sagebrush flat, but good cover is available in the pinyon-juniper woodland along the ridge east of the site. This entire area is considered critical deer winter range. There is evidence of substantial deer use on the site during past readings. Pellet group quadrat frequency data from 1995 indicated moderate numbers of deer and elk use this area. In 2000, a pellet group transect read along the study site baseline estimated 38 deer and 35 elk days use/acre (94 ddu/ha and 86 edu/ha).

Soils are alluvially deposited, moderately deep and somewhat sandy in texture. Effective rooting depth is estimated at just over 15 inches with deeper measurements limited only by soil compaction. There is little rock on the soil surface or within the profile. Soil texture is a sandy clay loam with a slightly alkaline soil reaction (pH of 7.7). Exposed bare ground was extensive and erosion was occurring at an accelerated rate in 1982, as evidenced by many small rills and gullies. Vegetation was sparse and generally inadequate to prevent soil movement. Conditions have improved slightly since then, but they are still only poor to fair and erosion is still a problem.

The key browse species is Wyoming big sagebrush, with shadscale being present but of secondary importance. Density of sagebrush has fluctuated considerably since 1982 when 2,533 sagebrush plants/acre were estimated. In 1988, that number increased by 74% to 9,865 plants/acre. However, the number of mature plants remained about the same in 1982 and 1988 (2,000 to 2,066 plants/acre). The large increase reported in 1988 was primarily the result of a significant rise in young plants which increased from 333 plants/acre in 1982 to 6,466 by 1988. The number of decadent plants also increased from 200 to 1,333 plants/acre, but due to the large number of young plants, percent decadency remained low at 14%. During the 1995 reading, the population declined to 5,080 plants/acre due to a decline in the young age class and number of decadent plants. Percent decadency remained similar at 15%. Use was also heavier in 1995. The population has remained stable at 5,080 plants/acre in 2000. Use is moderate to heavy, but due to the dry conditions, vigor is poor with 16% of the population. Percent decadence has increased to 33%. In addition, 43% (720 plants/acre) of the decadent plants appear to be dying. However, there seems to be enough seedlings and young to maintain the population at this time.

Shadscale are moderately abundant and currently ('00) provide 22% of the browse cover with a density of 4,020 plants/acre. Use is mostly light and vigor generally good.

The herbaceous understory is deficient. Four perennial grass species, thickspike wheatgrass, Indian ricegrass, squirreltail and needle-and-thread make up the bulk of the herbaceous cover (81% in 1995 and 91% in 2000). Perennial forbs are scarce with hoary aster, longleaf phlox and scarlet globemallow combining to produce most of the meager forb cover. Total forb cover was just barely over 1% in 1995 and just over one-half of 1% in 2000.

1982 APPARENT TREND ASSESSMENT

Currently, this area is rather poor quality winter range. Significant improvements are possible but will be difficult to achieve. Soil trend appears to be declining and must be reversed if any vegetative change is to occur. Vegetatively, the area appears stable but at a low level of plant species diversity. A principle management goal should be to improve species diversity among all classes of vegetation.

1988 TREND ASSESSMENT

There appears to have been a significant decrease in vegetative basal cover and litter cover. Although there was an increase in cryptogamic cover from 3 to 12%, there was an overall decrease in total protective ground cover in 1988 resulting in a large amount of bare soil (53%). Small gullies have expanded since the 1982 study, with accelerated soil loss continuing. Soil trend is down. Although the total number of sagebrush has increased by two and one-half times on the density plots, the density of mature plants and mean sagebrush occurrence are unchanged. There is a moderately dense stand of mature sagebrush (2,066 plants/acre) and consistent cover of 8%. More decadent plants, but also many more young plants were found in 1988. The degree of hedging has increased since 1982. Hedging on 48% of the available sagebrush is moderate, whereas most (87%) were rated as lightly hedged in 1982. Trend appears up due to the large numbers of seedling and young plants and a stable mature population. Trend for the herbaceous understory is stable but in poor condition. Quadrat frequency of grasses increased slightly while frequency of forbs declined.

TREND ASSESSMENT

soil - down (1)

browse - up (5)

herbaceous understory - stable but in poor condition (3)

1995 TREND ASSESSMENT

Soil conditions have improved but are still poor. Percent bare ground declined from 53% in 1988 to 34%. Litter cover remained similar and cryptogamic cover increased to 16%. In addition, sum of nested frequency for grasses increased providing improved soil protection. Trend for soil is up but still only in fair condition. The browse trend is stable. Past data suggest wide fluctuations in Wyoming big sagebrush density. However, percent decadency has remained similar to 1988 estimates (13% vs 14%) and there are adequate numbers of seedlings and young plants to maintain the population. The proportion of plants displaying heavy use has increased from 3% to 35%. This could cause an increase in decadence in the future as heavy use increases or if use is consistently high for several years. Trend for the herbaceous understory is slightly up for grasses and forbs but still deficient.

TREND ASSESSMENT

soil - up (5)

browse - stable (3)

herbaceous understory - slightly up but still deficient (4)

2000 TREND ASSESSMENT

Trend for soil is down slightly. Relative percent cover of bare ground has increased slightly while litter cover has declined slightly. In addition, the ratio of protective ground cover (vegetation, litter and cryptogams) to bare ground has decreased slightly. There is still erosion occurring in the area with several active gullies around the site. Trend for the key browse species, Wyoming big sagebrush, appears stable. Density is identical to 1995 estimates and use is also similar. Drought is obviously effecting the health of the sagebrush however. The proportion of sagebrush displaying poor vigor has increased from 7% in 1995 to 16% in 2000. Percent decadence has also increased from 15% to 33%. In addition, 43% (720 plants/acre) of the decadent shrubs appear to be dying. Seedling and young recruitment is good however and appears sufficient to maintain the population at this time. A return to normal precipitation patterns will do much to improve sagebrush health. Trend for the herbaceous understory is stable for grasses and down slightly for forbs. Forbs are still very limited and currently produce less than 1% cover. Since grasses provide the majority of the herbaceous cover (about 95% of it), the overall herbaceous trend is stable.

TREND ASSESSMENT

soil - slightly down (2)

browse - stable (3)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Herd unit 17 , Study no: 53

T y p e	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	_a 132	_b 173	_{ab} 156	11	45	59	56	2.55	3.42
G	Bromus tectorum (a)	-	1	-	-	-	1	-	.00	-
G	Carex spp.	_b 73	_a 38	_a 15	14	28	16	6	.23	.18
G	Oryzopsis hymenoides	_{ab} 40	_b 65	_a 31	57	19	28	16	1.10	.87
G	Sitanion hystrix	29	29	49	-	12	11	19	1.33	1.10
G	Sporobolus cryptandrus	-	2	-	-	-	1	-	.00	-
G	Stipa comata	_a 29	_a 51	_b 103	8	12	19	39	1.82	4.39
Total for Annual Grasses		0	1	0	0	0	1	0	0.00	0
Total for Perennial Grasses		303	358	354	90	116	134	136	7.06	9.97
Total for Grasses		303	359	354	90	116	135	136	7.07	9.97
F	Arabis spp.	_a -	_b 7	_{ab} 3	-	-	3	1	.04	.00
F	Chenopodium fremontii (a)	-	3	-	-	-	2	-	.01	-
F	Chenopodium leptophyllum (a)	-	_b 6	_a -	-	-	5	-	.02	-
F	Descurainia pinnata (a)	-	1	1	-	-	1	1	.00	.00
F	Draba spp. (a)	-	3	-	-	-	1	-	.00	-
F	Eriogonum cernuum (a)	-	2	-	-	-	2	-	.01	-
F	Lappula occidentalis (a)	-	_b 16	_a -	-	-	7	-	.03	-
F	Lepidium spp. (a)	-	_b 24	_a -	-	-	9	-	.12	-
F	Lychnis drummondii	1	-	-	22	1	-	-	-	-
F	Machaeranthera canescens	_a 6	_b 32	_a 1	10	2	15	1	.22	.03
F	Phlox longifolia	_a 3	_b 81	_a 7	-	2	34	3	.21	.06
F	Plantago patagonica (a)	-	_b 9	_a -	-	-	4	-	.07	-
F	Schoenocrambe linifolia	_a 2	_b 10	_a 1	-	1	6	1	.03	.03
F	Sphaeralcea coccinea	52	65	62	20	22	27	30	.45	.50
F	Townsendia incana	-	1	-	-	-	1	-	.03	-
Total for Annual Forbs		0	64	1	0	0	31	1	0.28	0.00
Total for Perennial Forbs		64	196	74	52	28	86	36	0.99	0.62
Total for Forbs		64	260	75	52	28	117	37	1.28	0.63

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --

Herd unit 17 , Study no: 53

Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	<i>Artemisia tridentata wyomingensis</i>	93	82	11.23	13.25
B	<i>Atriplex confertifolia</i>	63	70	2.59	4.47
B	<i>Ceratoides lanata</i>	0	2	-	-
B	<i>Chrysothamnus viscidiflorus viscidiflorus</i>	1	1	-	-
B	<i>Opuntia</i> spp.	36	39	1.10	.97
B	<i>Pinus edulis</i>	0	4	.15	.38
B	<i>Sarcobatus vermiculatus</i>	16	14	1.28	1.25
B	<i>Tetradymia spinosa</i>	0	0	.00	-
Total for Browse		209	212	16.36	20.32

BASIC COVER --

Herd unit 17 , Study no: 53

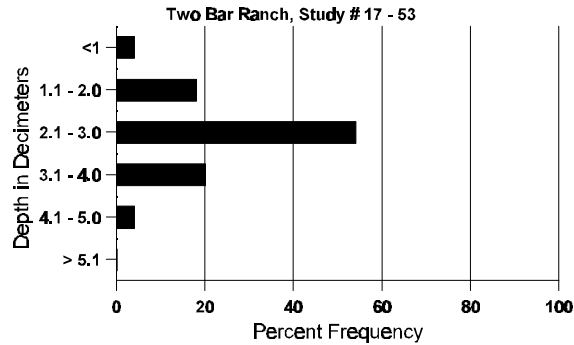
Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	323	312	5.50	2.00	26.45	30.25
Rock	21	5	0	1.00	.06	.15
Pavement	39	20	0	.50	.12	.09
Litter	393	351	45.25	31.50	29.09	27.65
Cryptogams	289	225	2.50	12.25	15.82	15.10
Bare Ground	339	318	46.75	52.75	33.79	45.52

SOIL ANALYSIS DATA --

Herd Unit 17, Study # 53, Study Name: Two Bar Ranch

Effective rooting depth (inches)	Temp °F (depth)	pH	% sand	% silt	% clay	% OM	PPM P	PPM K	dS/m
15.42	62.8 (16.14)	7.7	52.6	24.8	22.6	1.2	1.5	92.8	0.5

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 53

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'95	'00	00	00
Rabbit	2	3	61	N/A
Elk	17	11	452	35 (86)
Deer	28	9	487	38 (93)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 53

A Y G R E	Form Class (No. of Plants)										Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia nova																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	11	23	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
		'82				00%				00%								
		'88				00%				00%								
		'95				00%				00%								
		'00				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	0		-			

A Y G R E	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3		4	Ht.	
Artemisia tridentata wyomingensis																	
S	82	30	-	-	-	-	-	-	-	-	30	-	-	-	2000		30
	88	8	14	-	-	-	-	6	-	-	23	5	-	-	1866		28
	95	13	-	-	4	-	-	-	-	-	17	-	-	-	340		17
	00	9	-	-	-	-	-	-	-	-	9	-	-	-	180		9
Y	82	5	-	-	-	-	-	-	-	-	5	-	-	-	333		5
	88	24	35	1	-	-	-	37	-	-	96	-	1	-	6466		97
	95	33	15	11	3	3	-	-	-	-	65	-	-	-	1300		65
	00	18	2	-	1	-	-	7	-	-	28	-	-	-	560		28
M	82	27	3	-	-	-	-	-	-	-	27	3	-	-	2000	25 29	30
	88	18	12	1	-	-	-	-	-	-	30	1	-	-	2066	22 21	31
	95	4	84	62	-	1	-	-	-	-	150	-	1	-	3020	21 30	151
	00	40	58	42	1	-	1	-	-	-	138	-	4	-	2840	17 25	142
D	82	1	2	-	-	-	-	-	-	-	1	2	-	-	200		3
	88	5	11	3	-	-	-	1	-	-	19	1	-	-	1333		20
	95	3	15	17	-	3	-	-	-	-	21	-	-	17	760		38
	00	16	40	23	-	1	4	-	-	-	47	-	1	36	1680		84
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	1320		66
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	1240		62
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>			
'82		13%				00%				00%				+74%			
'88		39%				03%				.67%				-49%			
'95		48%				35%				07%				+ 0%			
'00		40%				28%				16%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	2533	Dec:	8%		
												'88	9865		14%		
												'95	5080		15%		
												'00	5080		33%		

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Atriplex confertifolia																		
S	82	17	-	-	-	-	-	-	-	-	17	-	-	-	1133			17
	88	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	82	19	-	-	-	-	-	-	-	-	19	-	-	-	1266			19
	88	12	1	-	-	-	-	2	-	-	15	-	-	-	1000			15
	95	30	-	-	1	-	-	-	-	-	31	-	-	-	620			31
	00	17	-	-	8	-	-	-	-	-	25	-	-	-	500			25
M	82	13	7	-	-	-	-	-	-	-	16	4	-	-	1333	12	20	20
	88	24	2	1	-	-	-	1	-	-	28	-	-	-	1866	10	10	28
	95	106	11	4	-	-	-	-	-	-	121	-	-	-	2420	12	19	121
	00	81	8	20	41	-	2	-	-	-	152	-	-	-	3040	8	15	152
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	5	3	-	-	-	-	-	-	-	8	-	-	-	533			8
	95	2	-	-	-	-	-	-	-	-	-	-	-	2	40			2
	00	12	9	2	-	-	-	1	-	-	20	-	-	4	480			24
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		18%			00%			00%			+24%							
'88		12%			02%			00%			- 9%							
'95		07%			03%			01%			+23%							
'00		08%			12%			02%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	2599	Dec:	0%			
												'88	3399		16%			
												'95	3080		1%			
												'00	4020		12%			
Ceratoides lanata																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	7	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			50%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	0		0%			
												'95	0		0%			
												'00	40		50%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus viscidiflorus viscidiflorus																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20	10	4	1
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	9	18	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%			+ 0%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	20		-			
												'00	20		-			
Opuntia spp.																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	29	-	-	-	-	-	-	-	-	29	-	-	-	1933	4	3	29
	95	53	-	-	1	-	-	-	-	-	53	-	-	1	1080	5	15	54
	00	63	-	-	2	-	-	-	-	-	62	-	3	-	1300	4	9	65
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	8	-	-	-	-	-	-	-	-	4	-	-	4	160			8
	00	3	-	-	-	-	-	-	-	-	-	-	-	3	60			3
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%			-39%							
'95		00%			00%			08%			+13%							
'00		00%			00%			08%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	2066		0%			
												'95	1260		13%			
												'00	1440		4%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Pinus edulis																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	1	-	-	-	-	-	-	1	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	3	-	-	-	-	-	-	-	-	-	3	-	-	60		3	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	00	1	-	-	-	-	-	-	-	-	-	1	-	-	20	-	1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	66		-			
												'95	0		-			
												'00	80		-			
Sarcobatus vermiculatus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	1	-	-	-	-	-	-	-	-	-	1	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	11	-	-	-	-	-	-	-	-	-	11	-	-	733		11	
	95	19	-	-	-	-	-	-	-	-	-	19	-	-	380		19	
	00	2	-	-	-	-	-	-	-	-	-	2	-	-	40		2	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	8	-	-	-	-	-	-	-	-	-	8	-	-	533	39	8	
	95	16	-	-	-	-	-	-	-	-	-	16	-	-	320	47	16	
	00	23	-	-	-	-	-	-	-	-	-	23	-	-	460	29	23	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	2	-	-	-	-	-	-	-	-	-	2	-	-	133		2	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%			-50%							
'95		00%			00%			00%			-29%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	1399		10%			
												'95	700		0%			
												'00	500		0%			

Trend Study 17-54-00

Study site name: Peatross Ranch.

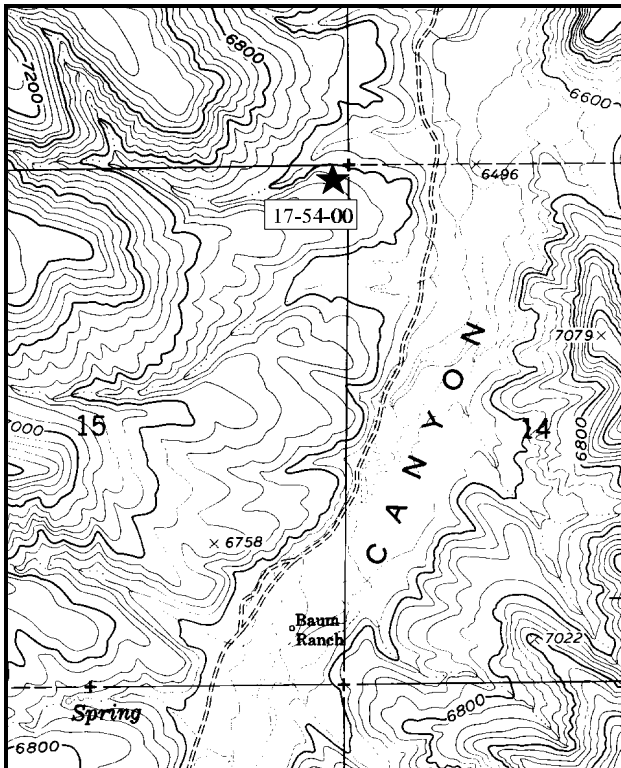
Range type: Pinyon-Juniper.

Compass bearing: frequency baseline 167°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

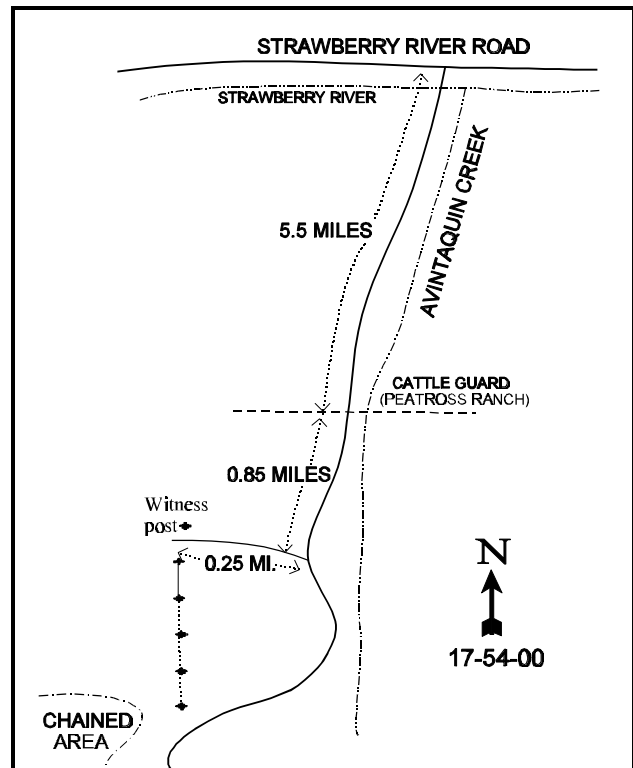
LOCATION DESCRIPTION

From the Strawberry Pinnacles, turn south off the Strawberry River Road. Cross Red Creek then bear left at the fork towards Avintaquin Canyon. Go south up Avintaquin canyon for about 5.3 miles to a fence and cattle guard. Proceed an additional 0.85 miles to a small canyon to the west. Walk up the faint road to the west for 0.25 miles to a witness post. From the witness post walk 200 yards at a bearing of 200°M to the 0-foot stake. The 0-foot stake is about 30 feet south of a trail that runs east-west. The baseline run up the hill in the P-J and is are marked by green steel fenceposts approximately 12-18 inches in height.



Map Name: Avintaquin Canyon

Township 5S, Range 8W, Section 15



Diagrammatic Sketch

UTM 4433508 N, 519130 E

DISCUSSION

Trend Study No. 17-54 (14-1)

The Peatross Ranch trend study is located approximately one-half mile north of the Peatross Ranch headquarters on private land in Avintaquin Canyon. The area is deer winter range at an elevation of 6,680 feet. The range type is pinyon-juniper woodland with a grass-mixed browse understory. Slope is approximately 30% and exposure is to the north. Grazing from both livestock and deer has been moderately heavy in the past. The site is intersected by cattle trails yet use by livestock appears heavier on top of the hill in a nearby chained area. Quadrat frequency of deer pellet groups was estimated at 35% in 1995. A pellet group transect read along the study site baseline in 2000 estimated 12 deer and 20 cow days use/acre (30 ddu/ha and 49 cdu/ha). One elk pellet group was also sampled.

Soils are loose and moderately deep. Effective rooting depth is estimated at over 17 inches. Soil texture is a clay loam with a neutral soil reaction (pH of 7.2). Phosphorus is limited at only 2.1 ppm. Values less than 10 ppm can limit normal plant growth and development. Limestone is the principal parent material. The soil is moderately rocky and soil movement is evident on the steeper terrain. A profile stoniness index shows rock to be uniformly distributed throughout the profile. Vegetative cover is almost evenly divided between grasses, forbs and browse.

Browse composition and density is poor. The site is dominated by pinyon and juniper trees. Canopy cover of pinyon and juniper was estimated at 31% in 1995 and 32% in 2000. Point-center quarter data from 2000 estimated 21 pinyon and 26 Utah and Rocky Mountain juniper trees/acre. Average diameter of pinyon is 6 inches while diameter of juniper averages nearly 14 inches.

Of the 8 understory browse species encountered, only mahogany and snowberry are palatable and in sufficient densities to provide some useful forage. The key browse species, true mountain mahogany, had a stunted, very heavily hedged appearance in 1988, which showed no evidence of seed production. During the 1995 reading, only a few larger plants were producing seed. Most plants average 2 feet in height. Density was at 999 plants/acre in 1982. Of these, 33% were heavily hedged. In 1988, 1,666 young plants/acre were estimated. It is likely that some of these young plants were actually, small statured mature shrubs. Utilization was reported heavy on 76% of the mahogany in 1988, with poor vigor found in 4% of the population. A more balanced population was found in 1995 when 20 seedling, 60 young, 840 mature and 20 decadent plants/acre were estimated. A much larger, more representative sample was used in 1995. Dead plants, first counted in 1995, totaled only 40 plants/acre. This would indicate a fairly stable population. Utilization continued to be heavy with 63% of the mahogany displaying heavy use. Data from 2000 estimate a similar density to 1995 with similar use, good vigor and low decadence.

Snowberry has an estimated density of 760 plants/acre in 2000. They show only light use. Other, less desirable browse encountered on the site include: mountain low rabbitbrush, corymbed eriogonum, broom snakeweed and gray horsebrush.

The herbaceous understory accounted for 69% of the vegetative cover in 1995 and 63% in 2000. Nine perennial grass species were encountered in 2000. Dominant species include: bluebunch and slender wheatgrass, Carex, Salina wildrye, Indian ricegrass and needle-and-thread grass. The forb composition is diverse but dominated by less desirable species, stemless hymenoxys, mat penstemon and desert phlox.

1982 APPARENT TREND ASSESSMENT

Range trend appears to be declining in all categories. Loss of soil is unacceptably high, the browse species appear to be in a state of decline, undesirable shrubs are probably increasing and forb composition is unsatisfactory. Only the grass component seems fairly stable, but even it could be threatened by an increased presence of Salina wildrye. This plant dominates many similar sites in the Avintaquin Canyon area.

1988 TREND ASSESSMENT

Ground cover characteristics have declined slightly. Basal vegetative cover declined from 12% to 10% and percent bare ground increased from 11.5% to 16%. Trend for browse is slightly improved, but density and composition are still poor. The key browse species, true mountain mahogany, has increased in density but is more heavily hedged. There were some shifts in the grass composition. Slender wheatgrass and Salina wildrye are more prevalent. However, frequency of grass is unchanged since 1982. Frequency of forbs increased slightly although the increase can be attributed mainly to low value species such as stemless hymenoxys, desert phlox and rose pussytoes.

TREND ASSESSMENT

soil - down slightly (2)

browse - slightly improved but composition and density are still poor (4)

herbaceous understory - slightly improved but dominated by low value increasers (4)

1995 TREND ASSESSMENT

Ground cover characteristics have improved since 1988. Percent litter cover increased from 37% to 44% and percent bare ground declined from 16% to 14%. Trend for soil is slightly up. Browse trend for the key species, true mountain mahogany, is stable with only 2% decadency and heavy use reported on 63% of the population, down from 76% in 1988. One would not expect a much higher density for mahogany with pinyon-juniper canopy cover exceeding 30%. Trend for the herbaceous understory is down for both grasses and forbs. Sum of nested frequency for grasses declined by 28% since 1988 with 4 of the 8 perennial grasses sampled declining significantly in nested frequency. Sum nested frequency of perennial forbs also declined. Much of the herbaceous understory decline can be attributed to the prolonged drought and competition with the pinyon-juniper canopy cover.

TREND ASSESSMENT

soil - slightly up (4)

browse - stable (3)

herbaceous understory - down (1)

2000 TREND ASSESSMENT

Trend for soil is stable. Relative percent cover of bare ground, litter and vegetation have remained similar to 1995 estimates. In addition, the ratio of protective ground cover (vegetation, litter and cryptogams) to bare ground is nearly the same. Trend for the key browse species, true mountain mahogany, is also stable. Use is heavy, vigor normal on most plants and percent decadence is low. The dominance of pinyon and juniper trees is one of the main negative aspects of this site. Overhead canopy cover is currently estimated at 32%. These trees will eventually crowd out the more desirable understory species. Trend for the herbaceous understory is mixed. Sum of nested frequency of perennial grasses has increased slightly due primarily to the presence of bluebunch wheatgrass which was not previously found. It appears that there were identification problems between bluebunch wheatgrass, Salina wildrye and slender wheatgrass in the past. Sum of nested frequency of perennial forbs declined. Overall the herbaceous trend is considered stable.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Herd unit 17 , Study no: 54

T y p e	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	_b 62	_a 6	_{bb} 40	38	25	2	19	.03	.64
G	Agropyron spicatum	_a -	_a -	_b 113	-	-	-	43	-	4.10
G	Agropyron trachycaulum	_c 191	_b 119	_a 82	38	69	44	39	2.46	2.22
G	Carex spp.	_b 99	_a 75	_a 58	31	48	32	28	1.95	1.68
G	Elymus salina	53	81	70	-	19	30	23	1.48	.85
G	Koeleria cristata	_b 55	_a 28	_a 14	44	23	9	6	.44	.34
G	Oryzopsis hymenoides	_b 92	_b 64	_a 37	52	38	30	18	.58	.94
G	Poa fendleriana	_a 1	_a -	_b 21	-	1	-	7	-	.13
G	Sitanion hystrix	-	2	-	-	-	2	-	.01	-
G	Stipa comata	_b 88	_b 86	_a 67	57	37	37	25	1.00	.91
Total for Annual Grasses		0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		641	461	502	260	260	186	208	7.97	11.84
Total for Grasses		641	461	502	260	260	186	208	7.97	11.84
F	Antennaria rosea	_b 78	_a 4	_a 14	11	37	3	8	.01	.14
F	Androsace septentrionalis (a)	-	10	2	-	-	5	1	.02	.00
F	Arabis spp.	-	1	-	-	-	1	-	.00	-
F	Astragalus convallarius	1	4	4	3	1	1	2	.01	.06
F	Astragalus purshii	_b 13	_b 7	_a -	9	6	4	-	.04	-
F	Aster spp.	-	5	1	-	-	2	1	.03	.00
F	Castilleja chromosa	_b 19	_b 24	_a 4	-	11	12	3	.18	.06
F	Caulanthus crassicaulis	_b 12	_a -	_a -	-	5	-	-	-	-
F	Calochortus nuttallii	_a -	_b 8	_a -	-	-	4	-	.02	-
F	Chenopodium fremontii (a)	-	_b 15	_a -	-	-	7	-	.25	-
F	Chenopodium leptophyllum (a)	-	2	-	-	-	2	-	.01	-
F	Cryptantha spp.	_b 60	_{ab} 45	_a 23	-	30	25	13	.30	.53
F	Descurainia pinnata (a)	-	_b 15	_a 3	-	-	6	1	.72	.00
F	Eriogonum alatum	-	3	-	-	-	1	-	.00	-
F	Erigeron pumilus	_a -	_a -	_b 16	20	-	-	10	-	.15
F	Eriogonum umbellatum	_b 20	_{ab} 13	_a 5	-	13	6	3	.08	.06

T y p e	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	Heterotheca villosa	-	-	-	4	-	-	-	-	-
F	Hymenoxys acaulis	c100	b50	a30	42	41	21	16	2.42	.27
F	Linum lewisii	b26	b27	a10	13	12	13	4	.14	.02
F	Machaeranthera canescens	4	-	-	-	3	-	-	-	-
F	Machaeranthera grindelioides	18	31	29	8	10	17	21	.27	.15
F	Penstemon caespitosus	a-	c77	b36	-	-	35	19	1.12	.27
F	Phlox austromontana	b166	a108	a125	-	73	48	58	1.59	3.60
F	Phlox longifolia	3	3	-	-	1	2	-	.01	-
F	Schoenocrambe linifolia	-	3	-	-	-	1	-	.04	-
F	Sphaeralcea coccinea	b28	a3	a-	10	10	1	-	.00	-
F	Taraxacum officinale	1	3	-	1	1	3	-	.04	-
Total for Annual Forbs		0	42	5	0	0	20	2	1.01	0.00
Total for Perennial Forbs		549	419	297	221	254	200	158	6.38	5.34
Total for Forbs		549	461	302	221	254	220	160	7.39	5.35

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --

Herd unit 17 , Study no: 54

T y p e	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Artemisia tridentata vaseyana	1	0	-	-
B	Cercocarpus montanus	29	28	1.96	1.02
B	Chrysothamnus depressus	27	11	.45	.51
B	Chrysothamnus viscidiflorus lanceolatus	16	12	.18	.25
B	Eriogonum corymbosum	56	45	2.43	2.29
B	Eriogonum microthecum	0	0	-	.01
B	Gutierrezia sarothrae	25	11	.08	.18
B	Juniperus osteosperma	0	4	.18	.63
B	Pinus edulis	0	5	1.02	4.74
B	Symphoricarpos oreophilus	11	10	.62	.28
B	Tetradymia canescens	8	8	.15	.15
Total for Browse		173	134	7.07	10.07

CANOPY COVER --

Herd unit 17 , Study no: 54

Species	Percent Cover
	'00
Juniperus osteosperma	20
Pinus edulis	12

BASIC COVER --

Herd unit 17 , Study no: 54

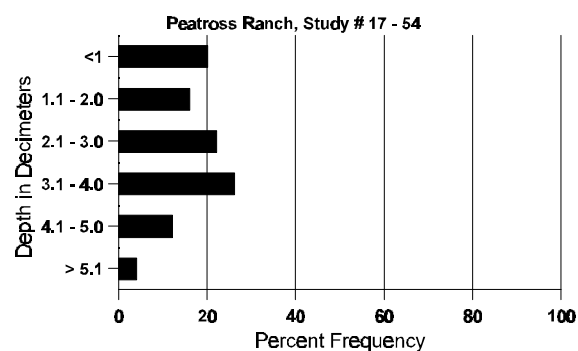
Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	316	345	12.25	10.25	21.96	28.42
Rock	265	246	4.00	6.25	12.46	14.16
Pavement	213	332	36.00	28.75	4.46	15.64
Litter	393	437	35.50	36.75	43.56	49.51
Cryptogams	10	-	.75	2.00	.53	0
Bare Ground	251	281	11.50	16.00	14.36	19.79

SOIL ANALYSIS DATA --

Herd Unit 17, Study # 54, Study Name: Peatross Ranch

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
17.21	57.4 (17.17)	7.2	31.3	36.2	32.6	3.9	2.1	140.8	0.9

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 54

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'95	'00	00	00
Rabbit	8	7	26	N/A
Elk	2	1	9	1 (2)
Deer	35	22	157	12 (30)
Cattle	1	1	235	20 (48)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 54

A Y G R E		Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Artemisia tridentata vaseyana																	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>% Change</u>						
'82		00%			00%			00%									
'88		00%			00%			00%									
'95		00%			00%			00%									
'00		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)														'82	0	Dec:	-
														'88	0		-
														'95	20		-
														'00	0		-

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Cercocarpus montanus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	88	3	3	19	-	-	-	-	-	-	24	-	1	-	1666		25	
	95	2	-	1	-	-	-	-	-	-	3	-	-	-	60		3	
	00	3	4	-	-	-	-	-	-	-	6	1	-	-	140		7	
M	82	-	8	5	-	-	-	-	-	-	6	7	-	-	866	22 18	13	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
	95	2	13	27	-	-	-	-	-	-	40	-	2	-	840	18 24	42	
	00	7	5	25	-	-	11	-	-	-	46	1	1	-	960	24 27	48	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	1	-	-	-	1	-	-	-	20		1	
	00	-	1	-	-	-	-	-	-	-	1	-	-	-	20		1	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'82 53%			33%			00%			+40%							
		'88 12%			76%			04%			-45%							
		'95 28%			63%			04%			+18%							
		'00 18%			64%			02%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	999	Dec:	0%			
												'88	1666		0%			
												'95	920		2%			
												'00	1120		2%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus depressus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	4	-	-	-	-	-	-	-	-	-	-	-	-	80		4	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	2	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
	00	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	62	-	-	2	-	-	-	-	-	-	-	-	-	1280	6	64	
	00	31	-	-	-	-	-	-	-	-	-	-	-	-	620	7	31	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%			-52%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	1320		-			
												'00	640		-			
Chrysothamnus viscidiflorus lanceolatus																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	2	-	-	-	-	-	-	-	-	-	-	-	-	133		2	
	95	6	-	-	-	-	-	-	-	-	-	-	-	-	120		6	
	00	2	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	28	-	-	-	-	-	-	-	-	-	-	-	-	560	11	28	
	00	15	-	-	-	-	-	-	-	-	-	-	-	-	300	8	15	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%			+81%							
'95		00%			00%			00%			-51%							
'00		00%			00%			06%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	133		0%			
												'95	700		3%			
												'00	340		0%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Eriogonum corymbosum																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	2	-	-	-	-	-	-	-	-	-	2	-	-	133		2	
	95	5	-	-	-	-	-	-	-	-	-	5	-	-	100		5	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	16	-	-	-	-	-	-	-	-	-	13	-	3	1066		16	
	95	20	-	-	1	-	-	-	-	-	-	21	-	-	420		21	
	00	42	-	-	-	-	-	-	-	-	-	42	-	-	840		42	
M	82	38	-	-	-	-	-	-	-	-	-	38	-	-	2533	16 12	38	
	88	19	-	-	-	-	-	-	-	-	-	18	-	1	1266	13 9	19	
	95	82	1	-	1	-	-	-	-	-	-	84	-	-	1680	14 18	84	
	00	40	3	-	-	2	-	-	-	-	-	45	-	-	900	16 16	45	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	2	-	-	-	-	-	-	-	-	-	2	-	-	133		2	
	95	2	-	-	-	-	-	-	-	-	-	2	-	-	40		2	
	00	36	-	4	-	-	-	-	-	-	-	29	-	1 10	800		40	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'82 00%			00%			00%			- 3%							
		'88 00%			00%			11%			-13%							
		'95 .93%			00%			00%			+16%							
		'00 04%			03%			09%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	2533	Dec:	0%			
												'88	2465		5%			
												'95	2140		2%			
												'00	2540		31%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Gutierrezia sarothrae																	
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	1	-	-	-	-	-	-	-	-	-	1	-	-	66		1
	95	1	-	-	-	-	-	-	-	-	-	1	-	-	20		1
	00	4	-	-	-	-	-	-	-	-	-	4	-	-	80		4
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	5	-	-	-	-	-	-	-	-	-	5	-	-	333		5
	95	21	-	-	-	-	-	-	-	-	-	21	-	-	420		21
	00	2	-	-	-	-	-	-	-	-	-	-	2	-	40		2
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	88	30	-	1	-	-	-	-	-	-	-	31	-	-	2066	8	31
	95	21	-	-	-	-	-	-	-	-	-	21	-	-	420	8	21
	00	35	-	-	-	-	-	-	-	-	-	35	-	-	700	7	35
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	1	-	-	-	-	-	-	-	-	-	1	-	-	66		1
	95	1	-	-	-	-	-	-	-	-	-	1	-	-	20		1
	00	2	-	-	-	-	-	-	-	-	-	2	-	-	40		2
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
		'82			00%			00%			00%						
		'88			00%			03%			00%						
		'95			00%			00%			00%						
		'00			00%			00%			00%						
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%		
												'88	2465		3%		
												'95	860		2%		
												'00	780		5%		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Juniperus osteosperma																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	-	-	-	-	-	-	-	-	-	2	-	-	-	40		2
Y	82	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	88	2	1	-	-	-	-	-	-	-	3	-	-	-	200		3	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	82	9	-	-	-	-	-	-	-	-	9	-	-	-	600	50	30	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	00	2	-	-	-	-	-	-	-	1	-	3	-	-	-	60	-	-
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			-60%							
'88		25%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	666	Dec:	0%			
												'88	266		25%			
												'95	0		0%			
												'00	80		0%			
Juniperus scopulorum																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	3	-	-	-	-	-	-	-	-	3	-	-	-	200		3	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	88	-	-	-	2	-	-	1	-	-	3	-	-	-	200	96	43	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	400		-			
												'95	0		-			
												'00	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Pinus edulis																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	3	-	-	-	-	-	-	-	-	1	-	2	-	200		3	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	7	-	-	-	-	-	-	-	-	7	-	-	-	140		7	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	4	-	-	-	-	-	-	-	-	4	-	-	-	266		4	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	8	-	-	-	-	-	-	-	-	8	-	-	-	160		8	
M	82	3	-	-	-	-	-	-	-	-	3	-	-	-	200	16	6	3
	88	-	-	-	-	-	-	1	-	-	1	-	-	-	66	217	118	1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>% Change</u>							
'82		00%			00%			00%			+40%							
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	200	Dec:	-			
												'88	332		-			
												'95	0		-			
												'00	160		-			
Pseudotsuga menziesii																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>% Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Symphoricarpos oreophilus																		
Y	82	5	-	-	-	-	-	-	-	-	5	-	-	-	333		5	
	88	9	1	-	-	-	-	-	-	-	6	-	4	-	666		10	
	95	28	-	-	-	-	-	-	-	-	28	-	-	-	560		28	
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	82	2	-	-	-	-	-	-	-	-	2	-	-	-	133	7	9	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	95	30	-	-	-	-	-	-	-	-	30	-	-	-	600	9	15	
	00	34	1	-	-	-	-	-	-	-	35	-	-	-	700	14	14	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	-	-	-	1	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+30%							
'88		10%			00%			40%			+43%							
'95		00%			00%			00%			-34%							
'00		03%			00%			03%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	466	Dec:	0%			
												'88	666		0%			
												'95	1160		0%			
												'00	760		3%			
Tetradymia canescens																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	95	7	3	-	-	-	-	-	-	-	10	-	-	-	200	9	9	
	00	7	-	-	-	-	-	-	-	-	7	-	-	-	140	10	8	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	1	-	-	-	-	-	-	-	3	-	-	-	60		3	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		30%			00%			00%			+ 9%							
'00		09%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	0		0%			
												'95	200		0%			
												'00	220		27%			

Trend Study 17-55-00

Study site name: Lower Horse Ridge.

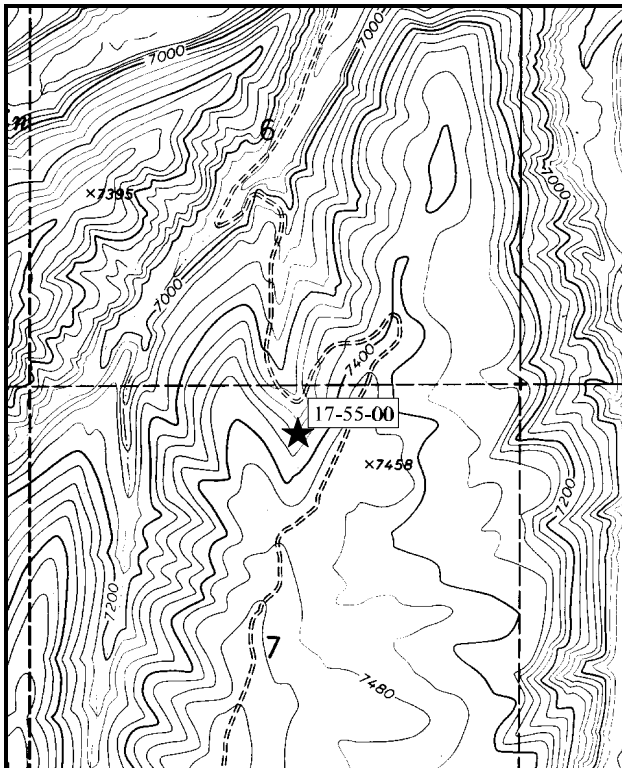
Range type: Mixed Mountain Brush.

Compass bearing: frequency baseline 348°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

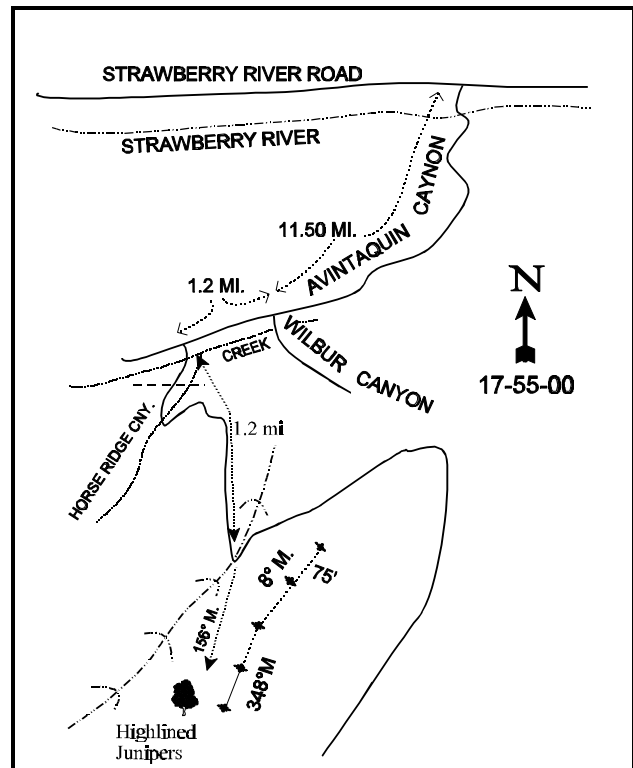
LOCATION DESCRIPTION

From the Strawberry River Road, proceed south up Avintaquin Canyon 12.7 miles. Turn left here onto a road hidden in the trees and cross Avintaquin Creek. Go up Horse Ridge Canyon 0.4 miles to a fence. Continue up the ridge 0.8 miles to a sharp left bend in the road. From the bend and the gully bottom, walk 80 paces bearing SSW 156°M towards a couple of highlined junipers. The 0-foot baseline stake is 10 feet away from one of the highlined junipers. The study stakes are green steel fenceposts 12 to 18 inches in height.



Map Name: Gray Head Peak

Township 6S, Range 8W, Section 7



Diagrammatic Sketch

UTM 4425321.782 N, 514950.752 E

DISCUSSION

Trend Study No. 17-55 (14-2)

The Lower Horse Ridge trend study is located on big game winter range near the north end of Horse Ridge at about 7,360 feet in elevation. The land is owned and managed by the Division of Wildlife Resources in the Avintaquin Wildlife Management Area. The range type is a mixed mountain brush on a west-southwest exposure with a 30% to 40% slope. Judging from the number of pellet groups observed, both past and present, along with the high level of browse utilization, this site is likely a winter concentration area for deer. A pellet group transect read along the study site baseline in 2000 estimated 23 deer and 3 elk days use/acre (57 ddu/ha and 7 edu/ha). Quadrat frequency of deer pellets was much higher in 1995 suggesting a higher level of use at that time.

Soil is moderately deep with an effective rooting depth estimated at over 16 inches. Texture is a loam with considerable surface limestone rock. Rock and pavement are concentrated on the surface between bunch grass and shrub interspaces. Rock and gravel are also distributed throughout the soil profile. Phosphorus is limited at only 2.8 ppm. Values less than 10 ppm can limit normal plant growth and development. Soil pedestalling and terracing are evident on the slopes, although there is little bare ground exposed and erosion is minimal. Percent organic matter is fairly high at 4.9%.

Several browse species occupy the site but the key species consist of true mountain mahogany and mountain big sagebrush. These two species provided 50% of the total browse cover in 1995 and 56% in 2000. Mahogany has been consistently heavily utilized since 1982, yet the population appears stable with good recruitment of young (17%) and low decadence. Vigor was poor on 30% of the population in 1982. However, currently ('00) vigor is normal.

Mountain big sagebrush provides additional preferred forage on this winter range. Density was estimated at 532 plants/acre in 1982, 50% of which were decadent. Use was heavy on 63% of the population and poor vigor was expressed on 50% of the plants. During the 1988 reading, the age class structure remained basically the same except the young age class increased from 66 to 1,400 plants/acre. Use was light to moderate and vigor good on all but a few decadent plants. By 1995, overall density declined slightly due to a reduction in the number of young plants with prolonged drought. Density of mature plants increased while the number of decadent plants declined. Vigor was generally good and heavy use was reported on only 6% of the population. Data from 2000 shows a similar density but due to the dry conditions, poor vigor has increased and percent decadence has gone up from 8% to 25%.

Several other browse species occur on the site including: serviceberry, dwarf rabbitbrush, mountain low rabbitbrush, white rubber rabbitbrush, snowberry, gray horsebrush and broom snakeweed. A few Utah Rocky Mountain juniper and pinyon pine are scattered throughout the area. Point-center quarter data from 2000 estimated 55 Utah juniper, 7 Rocky mountain juniper and 20 pinyon trees/acre. Average diameter of Utah juniper and pinyon is about 5 inches, while diameter of Rocky mountain juniper is 6 inches.

The herbaceous understory is dominated by grasses which combined to produce 14% cover in 1995 and 16% in 2000. Two species, bluebunch wheatgrass and Salina wildrye, account for nearly 90% of the grass cover (1995 and 2000). Forbs are diverse and moderately abundant with 21 perennial species encountered in 1995. Combined they produced only 5% cover in 1995 and 3% in 2000. Common species include: bastard toadflax, Indian paintbrush and Pingue hymenoxys. Sum of nested frequency of perennial grasses and forbs decreased in 2000 due to drought.

1982 APPARENT TREND ASSESSMENT

Soil condition was considered poor. Short of mechanical treatment and seeding, there is probably little that can be done to quickly arrest the poor condition. Vegetative trend also appears to be declining. The key species, with the possible exception of mountain big sagebrush, are almost certainly in trouble. Another area of potential concern is the abundance of undesirable increasers and the apparent juniper and pinyon encroachment.

1988 TREND ASSESSMENT

Trend for soil is slightly up due to increased litter cover and a decline in percent bare ground. Eroding soil has been replaced by increased rock and pavement cover. Trend for browse is up. The 1982 report suggested that one of the key browse species, true mountain mahogany, was in a state of decline. The 1988 data indicate otherwise. It shows an increased density of seedlings and young. Utilization is still moderate to heavy, but the average height of the mature plants increased from 20" to 30" and vigor has improved. Few mahogany have grown beyond browsing reach. Mountain big sagebrush has also increased in density and displays a more moderately hedged growth form. Trend for the herbaceous understory is up. Grass cover was good in 1982 and remains so in 1988 with an increase in overall quadrat frequency. The number of forb species encountered on the frequency baseline increased from 13 to 22 species and quadrat frequency increased 34%. Bastard toadflax remains the most abundant species.

TREND ASSESSMENT

soil - slightly up (4)

browse - up (5)

herbaceous understory - up (5)

1995 TREND ASSESSMENT

Trend for soil is considered stable. Percent bare ground declined slightly, although percent litter cover also decreased and frequency of grasses and forbs declined since 1988. The browse trend is stable for the key species, true mountain mahogany. There are no decadent plants and vigor is good. Heavy use increased from 47% in 1988 to 65% by 1995. Recruitment of seedlings and young declined slightly but there are still sufficient numbers to maintain the population. Many mature plants are producing seed. Average height remains similar to 1988 estimates. Mountain big sagebrush also displays a stable trend with a decline in percent decadency from 14% to 8%. Use is light to moderate and vigor is generally good. One negative aspect to the sagebrush trend is the continued decline in height and crown of mature plants. Trend for the herbaceous understory is stable for grasses and down for forbs. Because grasses make up 75% of the herbaceous understory cover, overall trend is considered stable. Nested frequency of bluebunch wheatgrass and Salina wildrye increased significantly, while nested frequency of all other grasses declined. Sum of nested frequency for forbs declined by 26%.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable for grasses to slightly down for forbs, stable overall (3)

2000 TREND ASSESSMENT

Trend for soil is stable. Percent cover of bare ground has declined slightly while litter and vegetation cover increased slightly. The ratio of protective cover (vegetation, litter and cryptogams) to bare ground has remained unchanged. There is little erosion occurring on the site. Trend for the key browse species, true mountain mahogany, is also stable. Use is moderate to heavy, vigor is normal and percent decadence is only 1%. Young plants are common and account for 17% of the population. Mountain big sagebrush is of secondary importance. It also appears stable with a similar density compared to 1995. Use is light to moderate. Sagebrush does seem to be showing signs of stress due to drought however. Currently, 16% of the plants sampled were classified with poor vigor and percent decadence has increased from 8% to 25%. Trend for the herbaceous understory is down slightly due to drought. Sum of nested frequency of perennial grasses and forbs has declined 31%. Three of the 4 most abundant perennial grasses have declined significantly in nested frequency since 1995. Many of the perennial forbs have also declined significantly in nested frequency.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --

Herd unit 17 , Study no: 55

T y p e	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron spicatum	_b 219	_a 230	_{ab} 190	44	87	82	69	7.10	11.46
G	Carex spp.	62	37	40	-	27	19	17	1.20	1.43
G	Elymus salina	_a 46	_c 140	_b 83	13	20	49	32	5.44	2.54
G	Oryzopsis hymenoides	_c 81	_b 49	_a 18	40	37	25	9	.58	.29
G	Poa fendleriana	-	3	3	-	-	1	1	.03	.15
G	Poa secunda	_b 68	_a 2	_a -	6	32	1	-	.03	-
Total for Annual Grasses		0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		476	461	334	103	203	177	128	14.40	15.88
Total for Grasses		476	461	334	103	203	177	128	14.40	15.88
F	Achillea millefolium	3	-	-	-	1	-	-	-	-
F	Androsace septentrionalis (a)	-	2	-	1	-	1	-	.00	-
F	Arabis spp.	_a -	_b 6	_{ab} 2	6	-	3	1	.06	.00
F	Aster chilensis	_b 86	_a 26	_a 13	-	34	13	6	.31	.05
F	Astragalus convallarius	_a 2	_b 15	_a -	28	1	10	-	.17	.00
F	Astragalus purshii	1	3	-	-	1	2	-	.01	-
F	Astragalus tenellus	4	-	-	-	1	-	-	-	-
F	Castilleja chromosa	33	33	44	16	17	16	19	.51	.44
F	Chenopodium leptophyllum (a)	-	_b 5	_a -	-	-	5	-	.02	-
F	Comandra pallida	_b 196	_a 137	_a 126	45	77	59	56	1.49	1.00

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	<i>Crepis acuminata</i>	4	-	1	-	2	-	1	-	.00
F	<i>Cryptantha</i> spp.	_a 9	_b 26	_a 4	25	3	11	2	.08	.06
F	<i>Delphinium nuttallianum</i>	1	-	-	-	1	-	-	-	-
F	<i>Descurainia pinnata</i> (a)	-	_b 10	_a -	-	-	5	-	.08	-
F	<i>Eriogonum alatum</i>	6	1	13	-	2	1	5	.03	.10
F	<i>Erigeron</i> spp.	-	1	4	-	-	1	2	.00	.01
F	<i>Hymenoxys richardsonii</i>	_b 51	_a 16	_a 31	5	25	9	14	.32	.92
F	<i>Ipomopsis aggregata</i>	4	-	-	1	2	-	-	-	-
F	<i>Linum lewisii</i>	_a 4	_b 24	_a 4	7	2	12	2	.12	.01
F	<i>Lithospermum</i> spp.	_b 26	_a 18	_a 7	-	19	9	3	.26	.21
F	<i>Machaeranthera canescens</i>	_c 37	_b 6	_a -	10	17	4	-	.07	-
F	<i>Machaeranthera grindelioides</i>	_a 14	_b 50	_a 17	-	6	25	9	.71	.14
F	<i>Penstemon caespitosus</i>	15	4	4	-	6	4	2	.02	.01
F	<i>Penstemon humilis</i>	_b 25	_b 18	_a 2	13	12	10	1	.07	.03
F	<i>Phlox austromontana</i>	_b 62	_b 43	_a 7	20	24	20	4	.35	.09
F	<i>Phlox longifolia</i>	-	5	4	-	-	2	2	.01	.01
F	<i>Potentilla gracilis</i>	-	2	1	-	-	1	1	.00	.00
F	<i>Senecio multilobatus</i>	18	7	4	4	8	4	2	.04	.01
F	<i>Taraxacum officinale</i>	-	5	-	-	-	2	-	.03	-
F	<i>Viguiera multiflora</i>	3	-	-	-	1	-	-	-	-
Total for Annual Forbs		0	17	0	0	0	11	0	0.10	0
Total for Perennial Forbs		604	446	288	181	262	218	132	4.71	3.14
Total for Forbs		604	463	288	181	262	229	132	4.82	3.14

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --

Herd unit 17 , Study no: 55

Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	<i>Amelanchier utahensis</i>	0	8	-	.48
B	<i>Artemisia frigida</i>	1	0	-	-
B	<i>Artemisia tridentata vaseyana</i>	34	34	1.06	2.26
B	<i>Cercocarpus montanus</i>	47	53	5.57	8.43
B	<i>Chrysothamnus depressus</i>	21	11	.36	.54
B	<i>Chrysothamnus nauseosus hololeucus</i>	1	3	-	-
B	<i>Chrysothamnus viscidiflorus lanceolatus</i>	39	38	.84	1.58

T y p e	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Eriogonum corymbosum	38	18	1.76	.53
B	Gutierrezia sarothrae	56	18	1.14	.11
B	Juniperus osteosperma	0	3	.30	.30
B	Juniperus scopulorum	0	2	-	1.85
B	Pinus edulis	0	4	2.09	2.30
B	Rosa woodsii	0	4	-	.15
B	Symphoricarpos oreophilus	3	8	.03	.44
B	Tetradymia canescens	10	10	.09	.24
Total for Browse		250	214	13.26	19.25

CANOPY COVER --

Herd unit 17 , Study no: 55

Species	Percent Cover
	'00
Juniperus osteosperma	2
Pinus edulis	2

BASIC COVER --

Herd unit 17 , Study no: 55

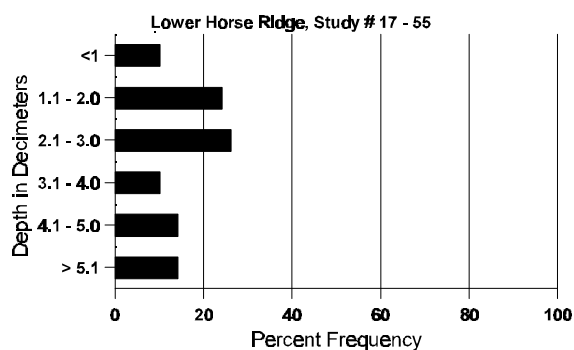
Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	332	311	7.00	6.00	34.53	37.02
Rock	244	190	3.75	7.75	11.69	6.51
Pavement	213	285	19.50	21.25	4.91	18.27
Litter	388	368	41.50	43.50	32.45	36.79
Cryptogams	7	4	0	0	.39	.01
Bare Ground	280	261	28.25	21.50	18.20	16.13

SOIL ANALYSIS DATA --

Herd Unit 17, Study # 55, Study Name: Lower Horse Ridge

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
16.28	58.8 (16.61)	7.3	27.3	46.2	26.6	4.9	2.8	336.0	1.8

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 55

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'95	'00	00	00
Rabbit	6	5	200	N/A
Elk	2	1	35	3 (7)
Deer	26	11	305	23 (58)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 55

A Y G R E		Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Amelanchier utahensis																	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	2	8	-	-	-	-	-	-	-	-	10	-	-	200		10
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	00	-	4	7	-	-	3	-	-	-	-	14	-	-	280	18	26
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change						
'82		00%			00%			00%									
'88		00%			00%			00%									
'95		00%			00%			00%									
'00		50%			42%			00%									
Total Plants/Acre (excluding Dead & Seedlings)														'82	0	Dec:	-
														'88	0		-
														'95	0		-
														'00	480		-

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Artemisia frigida																	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>			
'82		00%				00%				00%							
'88		00%				00%				00%							
'95		00%				00%				00%							
'00		00%				00%				00%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-		
												'88	0		-		
												'95	40		-		
												'00	0		-		
Artemisia tridentata vaseyana																	
S	82	11	1	-	-	-	-	-	-	-	12	-	-	-	800		12
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
Y	82	-	1	-	-	-	-	-	-	-	-	1	-	-	66		1
	88	19	-	-	1	-	-	1	-	-	21	-	-	-	1400		21
	95	16	2	2	4	-	-	-	-	-	22	2	-	-	480		24
	00	11	-	-	-	-	-	-	-	-	11	-	-	-	220		11
M	82	-	2	1	-	-	-	-	-	-	2	1	-	-	200	22 25	3
	88	3	-	-	1	-	-	-	-	-	4	-	-	-	266	14 17	4
	95	17	3	-	3	1	-	-	-	-	24	-	-	-	480	11 16	24
	00	20	10	1	-	-	-	-	-	-	28	-	3	-	620	16 22	31
D	82	-	-	4	-	-	-	-	-	-	-	-	4	-	266		4
	88	-	4	-	-	-	-	-	-	-	3	-	1	-	266		4
	95	2	1	1	-	-	-	-	-	-	3	-	-	1	80		4
	00	10	2	2	-	-	-	-	-	-	8	-	-	6	280		14
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	400		20
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	360		18
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>			
'82		38%				63%				50%				+72%			
'88		14%				00%				03%				-46%			
'95		13%				06%				02%				+ 7%			
'00		21%				05%				16%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	532	Dec:	50%		
												'88	1932		14%		
												'95	1040		8%		
												'00	1120		25%		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Cercocarpus montanus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	3	-	-	-	-	-	-	-	-	-	3	-	-	200		3	
	95	6	-	-	-	-	-	-	-	-	-	6	-	-	120		6	
	00	1	-	-	-	-	-	-	-	-	-	1	-	-	20		1	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	5	2	-	-	-	-	-	-	-	6	-	1	466		7	
	95	3	5	2	1	-	-	-	-	-	-	11	-	-	220		11	
	00	8	3	-	2	-	-	1	-	-	-	14	-	-	280		14	
M	82	-	-	10	-	-	-	-	-	-	-	7	-	3	666	20 17	10	
	88	-	4	6	-	-	-	-	-	-	-	9	-	1	666	30 23	10	
	95	1	11	42	-	3	-	-	-	-	-	57	-	-	1140	30 33	57	
	00	19	17	15	-	2	14	-	-	-	-	66	1	-	1340	43 37	67	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	-	1	-	-	20		1	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'82			00%			100%			+41%							
		'88			53%			47%			+17%							
		'95			28%			65%			+17%							
		'00			27%			35%			00%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	666	Dec:	0%			
												'88	1132		0%			
												'95	1360		0%			
												'00	1640		1%			

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total									
		1	2	3	4		5	6		7	8	9	1	2	3	4		
Chrysothamnus depressus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	2	-	-	-	-	-	-	-	-	-	-	-	-	133			2
	95	4	-	-	-	-	-	-	-	-	-	-	-	-	80			4
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	2	2	-	-	-	-	-	-	-	-	-	-	-	266	4	6	4
	95	35	-	-	4	-	-	-	-	-	-	-	-	-	780	6	8	39
	00	20	-	1	-	-	-	-	-	-	-	-	-	-	420	4	7	21
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	1	-	-	-	-	-	-	-	-	-	-	-	-	66			1
	95	2	-	-	-	-	-	-	-	-	-	-	-	2	40			2
	00	-	1	-	-	-	-	-	-	-	-	-	-	-	20			1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		29%			00%			14%			+48%							
'95		00%			00%			04%			-51%							
'00		05%			05%			00%										
Total Plants/Acre (excluding Dead & Seedlings)											'82		0	Dec:	0%			
											'88		465		14%			
											'95		900		4%			
											'00		440		5%			
Chrysothamnus nauseosus hololeucus																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	2	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	00	1	-	-	-	-	-	-	-	-	-	-	-	-	20			1
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	24	21	0
	00	2	-	-	-	-	-	-	-	-	-	-	-	-	40	7	10	2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%			+33%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)											'82		0	Dec:	-			
											'88		0		-			
											'95		40		-			
											'00		60		-			

A Y G R E		Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus viscidiflorus lanceolatus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	-	1	-	-	-	20		1
Y	82	4	-	-	-	-	-	-	-	-	4	-	-	-	266		4	
	88	5	1	-	-	-	-	-	-	-	5	-	1	-	400		6	
	95	5	-	-	-	-	-	-	-	-	5	-	-	-	100		5	
	00	7	-	-	-	-	-	-	-	-	7	-	-	-	140		7	
M	82	27	4	-	-	-	-	-	-	-	31	-	-	-	2066	10 11	31	
	88	66	8	1	-	-	-	-	-	-	71	-	4	-	5000	9 9	75	
	95	118	-	-	3	-	-	-	-	-	121	-	-	-	2420	11 13	121	
	00	91	-	-	-	-	-	-	-	-	91	-	-	-	1820	10 11	91	
D	82	5	2	1	-	-	-	-	-	-	-	1	7	-	533		8	
	88	5	3	-	-	-	-	-	-	-	7	-	1	-	533		8	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	10	-	-	-	-	-	-	-	-	10	-	-	-	200		10	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		14%			02%			16%			+52%							
'88		13%			01%			07%			-58%							
'95		00%			00%			00%			-14%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	2865	Dec:	19%			
												'88	5933		9%			
												'95	2520		0%			
												'00	2160		9%			

A Y G R E	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3		4		
Eriogonum corymbosum																	
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	1	-	-	-	-	-	-	-	-	-	1	-	-	66		1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	5	-	-	-	-	-	-	-	-	-	5	-	-	333		5
	95	14	-	-	1	-	-	-	-	-	-	15	-	-	300		15
	00	-	-	-	1	-	-	-	-	-	-	1	-	-	20		1
M	82	4	-	-	-	-	-	-	-	-	-	3	-	1	266	16 11	4
	88	5	-	-	-	-	-	-	-	-	-	5	-	-	333	11 11	5
	95	34	7	-	-	-	-	-	-	-	-	41	-	-	820	12 16	41
	00	8	3	4	1	1	-	-	-	-	-	17	-	-	340	14 18	17
D	82	2	-	-	-	-	-	-	-	-	-	1	-	-	133		2
	88	3	1	-	-	-	-	-	-	-	-	2	-	2	266		4
	95	-	-	-	1	-	-	-	-	-	-	1	-	-	20		1
	00	3	-	1	-	1	-	-	-	-	-	4	-	-	100		5
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>			
'82		00%				00%				33%				+57%			
'88		07%				00%				14%				+18%			
'95		12%				00%				00%				-60%			
'00		22%				22%				04%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	399	Dec:	33%		
												'88	932		29%		
												'95	1140		2%		
												'00	460		22%		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Gutierrezia sarothrae																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	88	10	-	-	-	-	-	-	-	-	10	-	-	-	666		10	
	95	18	-	-	-	-	-	-	-	-	18	-	-	-	360		18	
	00	11	-	-	-	-	-	-	-	-	11	-	-	-	220		11	
M	82	37	-	-	-	-	-	-	-	-	37	-	-	-	2466	8	10	
	88	77	-	-	-	-	-	-	-	-	77	-	-	-	5133	6	4	
	95	162	-	-	-	-	-	-	-	-	162	-	-	-	3240	9	9	
	00	36	-	-	-	-	-	-	-	-	36	-	-	-	720	4	4	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	5	-	-	-	-	-	-	-	-	5	-	-	-	333		5	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+58%							
'88		00%			00%			00%			-41%							
'95		00%			00%			00%			-74%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	2599	Dec:	0%			
												'88	6132		5%			
												'95	3600		0%			
												'00	940		0%			
Juniperus osteosperma																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	1	-	-	-	-	-	-	-	-	-	-	-	1	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	88	-	1	-	-	-	-	-	-	-	1	-	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	-	-	1	-	-	-	-	-	3	-	-	-	60		3	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+ 0%							
'88		100%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	-			
												'88	66		-			
												'95	0		-			
												'00	60		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Juniperus scopulorum																		
M	82	1	-	-	-	-	-	-	-	-	1	-	-	-	66	67	45	1
	88	-	-	-	-	1	-	-	-	-	1	-	-	-	66	122	35	1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>% Change</u>				
'82		00%				00%				00%				+ 0%				
'88		100%				00%				00%								
'95		00%				00%				00%								
'00		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	-			
												'88	66		-			
												'95	0		-			
												'00	40		-			
Pinus edulis																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
M	82	1	-	-	-	-	-	-	-	-	1	-	-	-	66	63	44	1
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66	79	55	1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>% Change</u>				
'82		00%				00%				00%				+ 0%				
'88		00%				00%				00%								
'95		00%				00%				00%								
'00		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	-			
												'88	66		-			
												'95	0		-			
												'00	80		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Rosa woodsii																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	00	8	-	-	-	-	-	-	-	-	8	-	-	-	160	19	29	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	180		-			
Symphoricarpos oreophilus																		
Y	82	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	88	-	4	-	-	-	-	-	-	-	4	-	-	-	266		4	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	82	-	-	1	-	-	-	-	-	-	-	1	-	-	66	7	9	
	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133	11	10	
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60	12	17	
	00	14	-	-	2	-	-	-	-	-	15	-	1	-	320	16	16	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			33%			00%			+50%							
'88		67%			00%			00%			-85%							
'95		00%			00%			00%			+81%							
'00		00%			00%			06%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	199	Dec:	-			
												'88	399		-			
												'95	60		-			
												'00	320		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Tetradymia canescens																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	4	-	-	-	-	-	-	-	-	4	-	-	-	266		4	
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	-	1	-	-	-	-	-	-	-	1	-	-	-	66	6	10	
	95	7	1	-	-	-	-	-	-	-	8	-	-	-	160	9	11	
	00	7	-	-	-	-	-	-	-	-	7	-	-	-	140	10	9	
D	82	-	-	-	-	-	1	-	-	-	1	-	-	-	66		1	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	-	2	-	-	-	-	-	-	3	-	-	1	80		4	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'82			00%			100%			+80%							
		'88			20%			00%			-40%							
		'95			10%			00%			+33%							
		'00			00%			13%			07%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	100%			
												'88	332		0%			
												'95	200		0%			
												'00	300		27%			

Trend Study 17-56-00

Study site name: Sam's Canyon.

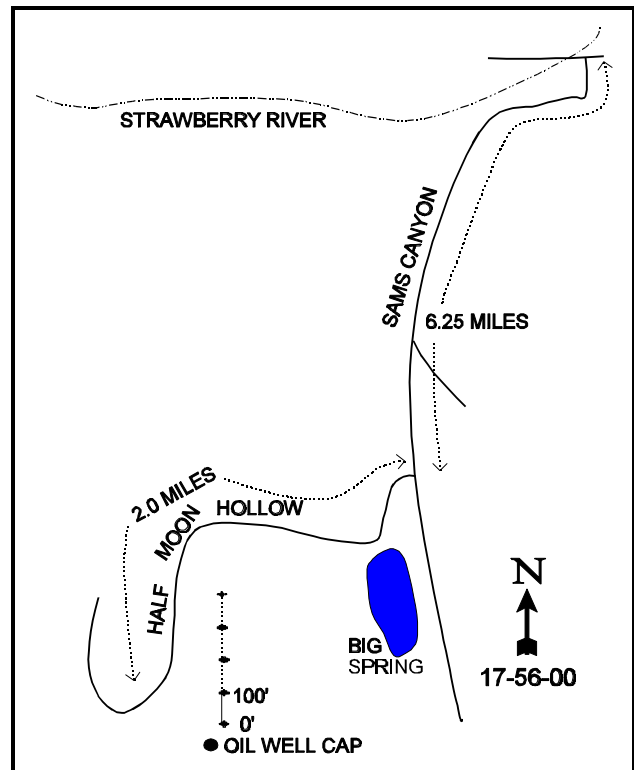
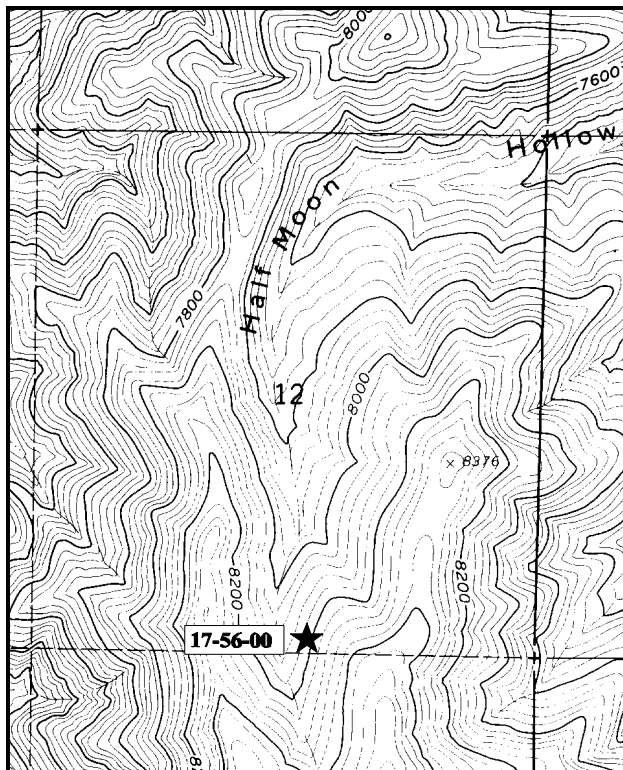
Range type: Mixed Mountain Brush.

Compass bearing: frequency baseline 0°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From the intersection of the Strawberry River Road and U.S. 40 near Starvation Reservoir, go west up the Strawberry River for 8.5 miles. Before the bridge, turn left. From the Strawberry River Road, go 6.25 miles up Sam's Canyon. Turn right into Half Moon Hollow (about 0.2 miles before Big Spring). Follow the old, rabbitbrush-covered road (which may be impassable to vehicles due to washouts and tall brush) about 2 miles up the canyon to when the road turns sharply right and goes up a dugway. The old drilling platform there is hardly noticeable, just a brush-covered flat spot in the bottom of the canyon. The well cap is 15" tall. From the capped well, the 0-foot baseline stake (marked with browse tag #7080) is 44 paces bearing 40°. The baseline runs north across the slope. The first density plot is located a few paces north of the 100-foot baseline stake.



Map Name: Sam's Canyon

Diagrammatic Sketch

Township 5S Range 8W , Section 12

DISCUSSION

Trend Study No. 17-56 (14-3)

***This site was not read in 2000 because the access road was washed out several miles from the site. Text from the 1995 "Utah Big Game Range Trend Studies" report has been retained. Consult the 1995 report for maps and data tables.

The Sam's Canyon study is located at the head of Half Moon Hollow, a tributary of Sam's Canyon. The study site is within Ute Indian Reservation lands. The range type is intermediate between black sagebrush and mixed mountain brush. However, black sagebrush tends to give the area its vegetative aspect as it provides the most cover of any browse species (32%). Elevation is relatively high (8,350 feet), but the site is on an exposed western slope of about 35%, so winter snow usually does not accumulate.

Soils are limestone derived and very rocky on the surface. Subsurface soil tends to be unconsolidated with a high clay content. Very little organic matter is present. Most of the finer surface soil particles have long since been eroded away. Erosion pavement and rock, cover a considerable amount of the ground surface.

Several species of browse offer forage for wildlife but true mountain mahogany would be considered one of the key species. Mahogany appears to be in good condition with respect to age structure and vigor. The average mature shrub measures only 2½ feet in height and is all available. Utilization has been extremely heavy in the past. In 1982, 69% of the mature shrubs displayed heavy use (>60% of stems browsed). By 1988, 62% of the plants were heavily utilized. Use was more moderate in 1995 with only 16% of the mahogany classified as heavily browsed and 54% moderately utilized. Vigor is good and no decadent plants were encountered in 1995. Reproductive potential and the proportion of young plants in the population have continued to decline, but there still appears to be sufficient numbers to maintain the population. The large number of young plants and reduced number of mature plants sampled in 1988 appears to be a classification problem and not a major shift in age structure.

Secondary browse species include: serviceberry, black sagebrush and small numbers of mountain big sagebrush. Mature serviceberry average about 3 feet in height and are considered all available to wildlife. These shrubs have also been heavily utilized in the past but now exhibit mostly light hedging. Vigor is good and percent decadency low at 2%. A healthy, moderately dense stand of black sagebrush occupies the site. It provides the most ground cover of all the browse species (32%) compared to 29% for mahogany. Density has gone down since 1988, but most of the loss was from the young age class which is not unusual with long periods of drought. Heavy use and percent decadency have declined.

The herbaceous understory accounts for 33% of the vegetation cover on the site. Bluebunch wheatgrass dominates the grass composition by producing 59% of the grass cover. A sedge and Salina wildrye are also abundant. Forb density and production is sparse, even though diversity is high with 23 perennial species encountered in 1995. Most species are low-growing forms of low to medium forage value. The most common species include: sego lily, cryptantha and sulfur eriogonum.

1982 APPARENT TREND ASSESSMENT

Soil trend appears to be in a state of decline. Erosion and soil loss prevent any significant litter buildup and make seedling establishment difficult over much of the area. Vegetative trend, however, appears more stable. The browse component, although heavily utilized, is in fair vigor and seems to be maintaining itself. Herbaceous diversity and density are moderately good considering the ongoing erosion. This condition should not be expected to improve without direct management intervention.

1988 TREND ASSESSMENT

Few changes are evident on this high elevation winter range. Ground cover percentages are unchanged and overall soil erosion does not appear as severe as described in 1982. Photograph comparisons indicate an obvious increase in the size and vigor of the key browse species. Data from the density plots show very little increase in true mountain mahogany, although young plants comprise 82% of the population. Black sagebrush has shown the greatest increase and was rated as being moderately hedged as opposed to heavily hedged in 1982. Other browse species provide moderate amounts of forage with their status remaining unchanged. Unpalatable increaser shrubs have not expanded significantly. Trend for browse is considered stable. Grass abundance has increased largely due to an increase in Salina wildrye from a quadrat frequency of 1% to 36%. Quadrat frequency of bluebunch also increased from 55% to 82%. Sixteen species of forbs were found, yet their density remains relatively low.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - up for grasses and down for forbs, stable overall (3)

1995 TREND ASSESSMENT

Trend for soil is stable. Even though percent bare ground has increased slightly, there appears to be no movement of soil and bare ground still is below 10%. Trend for browse is up with reduced heavy use, good vigor and low decadency rates of the preferred browse species, true mountain mahogany, serviceberry and black sagebrush. Unpalatable increasers do not appear to have expanding populations. Trend for the herbaceous understory appears stable.

TREND ASSESSMENT

soil - stable (3)

browse - up (5)

herbaceous understory - stable (3)

Trend Study 17-57-00

Study site name: Skitzzy Canyon.

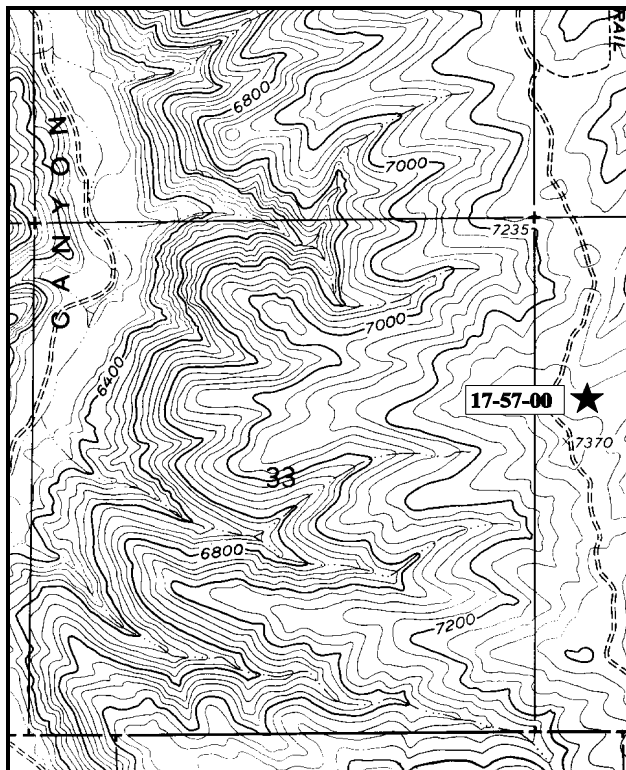
Range type: Chained, Seeded P-J.

Compass bearing: frequency baseline 188°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Belt 2 rebar @ 5ft.

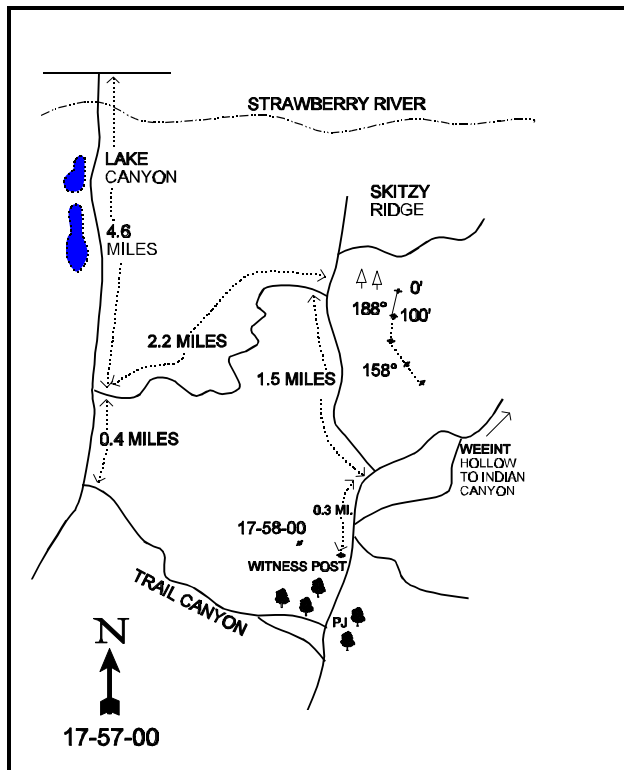
LOCATION DESCRIPTION

From the Strawberry River, take the Lake Canyon Road (3239 West) south for 4.6 miles to a road which goes up the canyon to the east. Turn left and drive approximately 2.2 miles up to a “T” intersection at the top of the ridge. [Skitzzy Ridge can also be reached via Trail Canyon the next (south) side canyon of Lake Canyon, or from Indian Canyon along the Weeint Hollow road]. At the top, look east into the chaining for two large conifers (Douglas firs). The 0-foot baseline stake is located to the east of the two trees. The baseline is marked by green, steel fenceposts approximately 12-18 inches in height.



Map Name: Buck Knoll

Township 4S, Range 6W, Section 34



Diagrammatic Sketch

UTM 4437809.805 N, 537851.536 E

DISCUSSION

Trend Study No. 17-57 (14-4)

This trend study is located on a pinyon-juniper chaining in Skitzy Canyon. The area is considered deer and elk winter range. The site has an elevation of 7,300 feet. Management for this area is with the Utah Division of Wildlife Resources. The study site is located on a ridge top where terrain is essentially level. The land slopes gently to the north-northeast, draining into Skitzy Canyon. Prior to treatment in 1977-78, the site was dominated by Utah Juniper and Colorado pinyon. Currently ('00), surviving and released pinyon and juniper trees have an estimated density of 44 trees/acre. The area is used heavily by elk and to a lesser extent by deer and livestock. Pellet group data from 2000 estimated 90 elk, 7 deer and 9 cow days use/acre (222 edu/ha, 17 ddu/ha and 22 cdu/ha). Deer pellet groups were recent while all cow pats were from the previous year (1999). About half of the elk pellet groups encountered were from spring.

Soils are relatively shallow and rocky, but stabilized as a result of excellent herbaceous vegetative cover. Effective rooting depth is estimated at just over 10 inches with much of the rock encountered in the top 4 inches of the soil profile. Soil texture is a sandy loam with a slightly alkaline soil reaction (pH of 7.8). Percent organic matter is very high at 8.4%. Erosion and soil loss prior to treatment was heavy, which resulted in some areas of pavement and bare ground. Much of this has since filled in with herbaceous vegetation and the rate of erosion being controlled.

Browse is a minor component of this chaining with no shrubs being encountered during the 1982 reading. By 1988, only a few black sagebrush and mountain big sagebrush were sampled. In 1995, the most numerous shrub was black sagebrush with an estimated density of 540 plants/acre. Age class distribution indicated an increasing population. Mountain big sagebrush had an estimated density of only 100 plants/acre. Use of these sagebrush species was mostly light. Density of black sagebrush continues to increase. During the 2000 reading, density was estimated at 820 plants/acre. The number of seedlings and young declined considerably, but the population will most likely slowly increase in the future. Density of mountain big sagebrush has declined slightly since 1995. Use of this more preferred sagebrush was moderate to heavy. Other preferred browse species occur on the site but did not fall within the shrub density strips. These include true mountain mahogany and antelope bitterbrush.

Grasses dominate the site by providing 73% of the total vegetation cover in 1995 and 76% in 2000. The grass composition is very diverse with 14 species encountered in 1995 and 12 species sampled in 2000. Crested wheatgrass is the most numerous species. It provided 65% of the grass cover in 1995 and 64% in 2000. Smooth brome and Russian wildrye are also fairly common. Forbs are also diverse but they are not abundant. The only common forb is looseflower milkvetch which provided 58% of the forb cover in 1995 and 79% in 2000. Seeded alfalfa was sampled in 1995 and 2000, indicating that it has persisted on the treatment.

1982 APPARENT TREND ASSESSMENT

This area was chained in 1977-78. Since the chaining the soil trend definitely appears to be improving. The development of vegetative cover and litter buildup has acted to reduce erosion and soil loss. The site supports a good herbaceous component but the current composition is not the most favorable for deer winter range. In time, shrub density will eventually increase through natural colonization of native species. However, if high value shrubs are desired more quickly, interseeding or transplanting would be required.

1988 TREND ASSESSMENT

Soil trend is considered slightly down due to a decline in basal vegetative cover and litter cover, combined with an increase in percent bare ground (7% to 12%). Erosion is not a problem however due to the gentle terrain and good distribution of vegetation and litter cover. Since the chaining treatment in 1977, there has been surprisingly little change in the browse component on this area. As in the 1982 study, there were only a few individual browse plants encountered. Many young shrubs were observed throughout the area, but were not common enough to be sampled. The general view photographs show a slight increase in the prominence of woody species, but grasses still dominate the site. Trend for browse is considered slightly up but density is still very low. Trend for the herbaceous understory is slightly up. Quadrat frequency of grasses increased while frequency of forbs remained similar to 1982.

TREND ASSESSMENT

soil - slightly down (2)

browse - slightly up but density is limited (4)

herbaceous understory - slightly up (4)

1995 TREND ASSESSMENT

Some ground cover characteristics have improved since 1988. Litter cover declined from 68% to 54%, but percent bare ground also declined from 12% to 7%. Browse is still limited, yet it has continually increased in density. Black sagebrush has increased to 540 plants/acre, 52% of which are young plants. Trend is considered slightly up. Trend for herbaceous understory is stable. Sum nested frequency of grasses and forbs have remained similar to those of 1988.

TREND ASSESSMENT

soil - slightly up (4)

browse - slightly up but density is limited (4)

herbaceous understory - stable (3)

2000 TREND ASSESSMENT

Trend for soil is stable with similar ground cover characteristics compared to 1995. There is no significant erosion occurring due to the excellent herbaceous understory and litter cover. Trend for browse is slightly up and continuing to slowly increase. Density is still poor however. Trend for the herbaceous understory is stable. Sum of nested frequency of perennial grasses declined slightly but the dominant grass species, crested wheatgrass, smooth brome and Russian wildrye have remained stable. Sum of nested frequency of perennial forbs also declined slightly but forbs currently provide only 11% of the herbaceous cover.

TREND ASSESSMENT

soil - stable (3)

browse - slightly up but density is limited (4)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Herd unit 17 , Study no: 57

T y p e	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron cristatum	_a 159	_b 259	261	45	64	87	86	11.42	13.32
G	Agropyron intermedium	48	56	61	6	19	25	27	.61	1.12
G	Agropyron trachycaulum	7	16	4	5	3	6	1	.64	.00
G	Bouteloua gracilis	1	-	-	1	1	-	-	-	-
G	Bromus inermis	60	74	72	14	23	28	29	1.89	2.04
G	Carex spp.	_b 40	_{ab} 20	_a 8	5	16	7	7	.13	.06
G	Dactylis glomerata	-	1	-	5	-	1	-	.00	-
G	Elymus cinereus	4	17	9	3	2	6	3	.62	.74
G	Elymus junceus	23	19	38	7	11	10	16	1.10	1.44
G	Elymus salina	-	-	6	-	-	-	2	-	1.23
G	Festuca ovina	_a -	_a 1	_b 20	-	-	1	8	.03	.21
G	Oryzopsis hymenoides	-	4	-	4	-	2	-	.18	-
G	Poa fendleriana	-	3	2	-	-	1	2	.03	.03
G	Poa secunda	_a -	_c 32	_b 4	15	-	14	3	.25	.04
G	Sitanion hystrix	_c 101	_b 12	_a -	40	43	8	-	.04	-
G	Stipa lettermani	_b 122	_a 47	_a 34	35	56	22	15	.58	.45
Total for Annual Grasses		0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		565	561	519	185	238	218	199	17.56	20.72
Total for Grasses		565	561	519	185	238	218	199	17.56	20.72
F	Androsace septentrionalis (a)	-	_b 40	_a 2	-	-	19	1	.12	.00
F	Antennaria rosea	-	-	-	1	-	-	-	-	-
F	Arabis spp.	_a 3	_{ab} 12	_b 19	-	2	7	9	.03	.04
F	Astragalus convallarius	12	4	-	1	5	2	-	.04	-
F	Astragalus miser	-	15	17	-	-	8	9	.57	.48
F	Astragalus tenellus	_b 45	_a 17	_a 16	17	19	9	9	3.78	2.28
F	Calochortus nuttallii	-	-	-	1	-	-	-	-	-
F	Chaenactis douglasii	-	5	3	5	-	2	1	.01	.00
F	Descurainia pinnata (a)	-	_b 8	_a -	-	-	4	-	.02	-
F	Eriogonum alatum	15	12	3	7	8	8	2	.14	.03
F	Erigeron flagellaris	-	-	-	1	-	-	-	-	-
F	Erigeron eatonii	3	2	-	-	1	1	-	.00	-
F	Eriogonum umbellatum	-	-	4	-	-	-	1	-	.00
F	Gayophytum ramosissimum (a)	-	3	-	-	-	2	-	.01	-
F	Grindelia squarrosa	-	3	-	1	-	1	-	.00	-
F	Hedysarum boreale	-	1	-	-	-	1	-	.15	-
F	Ipomopsis aggregata	1	6	-	1	1	2	-	.01	-

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	<i>Linum lewisii</i>	-	3	-	1	-	1	-	.00	-
F	<i>Medicago sativa</i>	-	7	3	1	-	2	2	.56	.21
F	<i>Penstemon caespitosus</i>	1	-	-	-	1	-	-	-	-
F	<i>Penstemon pachyphyllus</i>	-	5	-	-	-	2	-	.01	-
F	<i>Sisymbrium altissimum</i> (a)	-	3	-	-	-	1	-	.00	-
F	<i>Trifolium</i> spp.	-	-	-	2	-	-	-	-	-
Total for Annual Forbs		0	54	2	0	0	26	1	0.15	0.00
Total for Perennial Forbs		80	92	65	39	37	46	33	5.34	3.07
Total for Forbs		80	146	67	39	37	72	34	5.50	3.07

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --

Herd unit 17 , Study no: 57

Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	<i>Artemisia nova</i>	12	15	.64	1.18
B	<i>Artemisia tridentata</i> vaseyana	5	4	.21	.84
B	<i>Chrysothamnus nauseosus</i>	1	0	-	-
B	<i>Chrysothamnus viscidiflorus</i> lanceolatus	0	1	-	-
B	<i>Juniperus osteosperma</i>	0	2	.03	.78
B	<i>Pinus edulis</i>	0	3	.03	.81
Total for Browse		18	25	0.91	3.61

CANOPY COVER --

Herd unit 17 , Study no: 57

Species	Percent Cover
	'00
<i>Pinus edulis</i>	.60

BASIC COVER --

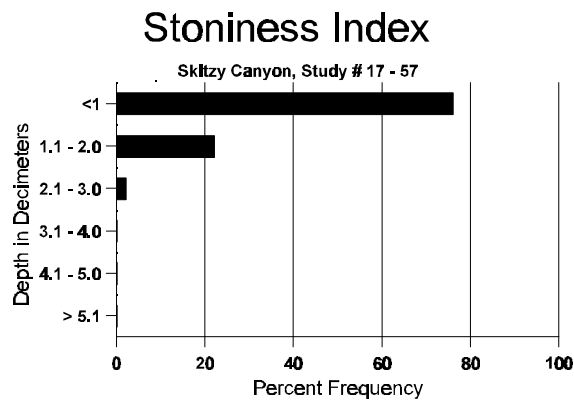
Herd unit 17 , Study no: 57

Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	325	327	7.50	4.75	26.94	29.00
Rock	237	130	3.25	4.50	12.60	5.57
Pavement	208	214	18.25	10.50	6.38	13.64
Litter	390	386	63.50	68.00	54.15	54.83
Cryptogams	13	66	.75	0	.05	.78
Bare Ground	154	164	6.75	12.25	6.84	7.07

SOIL ANALYSIS DATA --

Herd Unit 17, Study # 57, Study Name: Skitzzy Canyon

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
10.49	59.4 (14.25)	7.8	61.3	20.2	18.6	8.4	62.0	252.8	1.6



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 57

Type	Quadrat Frequency		Pellet Transect	
	'95	'00	Pellet Groups per Acre 00	Days Use per Acre (ha) 00
Rabbit	7	6	9	N/A
Horse	3	1	-	-
Elk	42	57	1175	90 (223)
Deer	6	5	87	7 (17)
Cattle	1	2	113	9 (23)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 57

Artemisia nova																			
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	15	-	-	-	-	-	-	-	-	-	-	-	-	300			15	
	00	2	-	-	-	-	-	-	-	-	-	-	-	-	40			2	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	9	5	-	-	-	-	-	-	-	-	-	-	-	280			14	
	00	5	-	-	-	-	-	-	-	-	-	-	-	-	100			5	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	88	2	-	-	-	-	-	-	-	-	-	-	-	-	133	8	11	2	
	95	5	8	-	-	-	-	-	-	-	-	-	-	-	260	17	32	13	
	00	20	4	-	-	-	-	-	-	-	-	-	-	-	480	14	27	24	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	9	1	-	2	-	-	-	-	-	-	-	-	-	240			12	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1	
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>					
'82		00%				00%				00%									
'88		00%				00%				00%				+75%					
'95		48%				00%				00%				+34%					
'00		12%				00%				00%									
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%				
												'88	133		0%				
												'95	540		0%				
												'00	820		29%				

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata vaseyana																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66	15	1	
	95	2	1	-	-	-	-	-	-	-	3	-	-	-	60	27	3	
	00	-	1	1	-	-	-	-	-	-	2	-	-	-	40	23	2	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%			+34%							
'95		20%			00%			00%			-20%							
'00		25%			25%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	66		0%			
												'95	100		0%			
												'00	80		25%			
Cercocarpus montanus																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	22	0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus nauseosus																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	1	-	-	-	-	-	-	-	-	-	1	-	-	20	31	33	1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	34	45	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>% Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	20		-			
												'00	0		-			
Chrysothamnus viscidiflorus lanceolatus																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	36	58	0
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	-	1	-	-	20			1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>% Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	0		0%			
												'95	0		0%			
												'00	20		100%			
Chrysothamnus viscidiflorus viscidiflorus																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	28	41	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>% Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Juniperus osteosperma																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	40		-			
Pinus edulis																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	82	1	-	-	-	-	-	-	-	-	1	-	-	-	66	41	24	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20	-	-	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+ 0%							
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	-			
												'88	66		-			
												'95	0		-			
												'00	60		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Purshia tridentata																		
M	'82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	'88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	'95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	17	30	0
	'00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	39	36	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'82			00%			00%			00%							
		'88			00%			00%			00%							
		'95			00%			00%			00%							
		'00			00%			00%			00%							
Total Plants/Acre (excluding Dead & Seedlings)												'82		0	Dec:	-		
												'88		0		-		
												'95		0		-		
												'00		0		-		

Trend Study 17-58-00

Study site name: Buck Knoll.

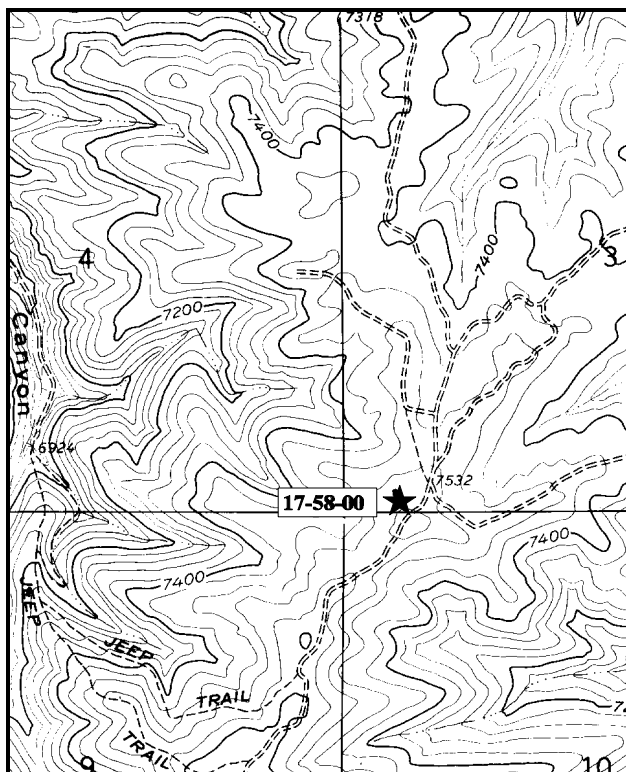
Range type: Chained, Seeded P-J.

Compass bearing: frequency baseline 345°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

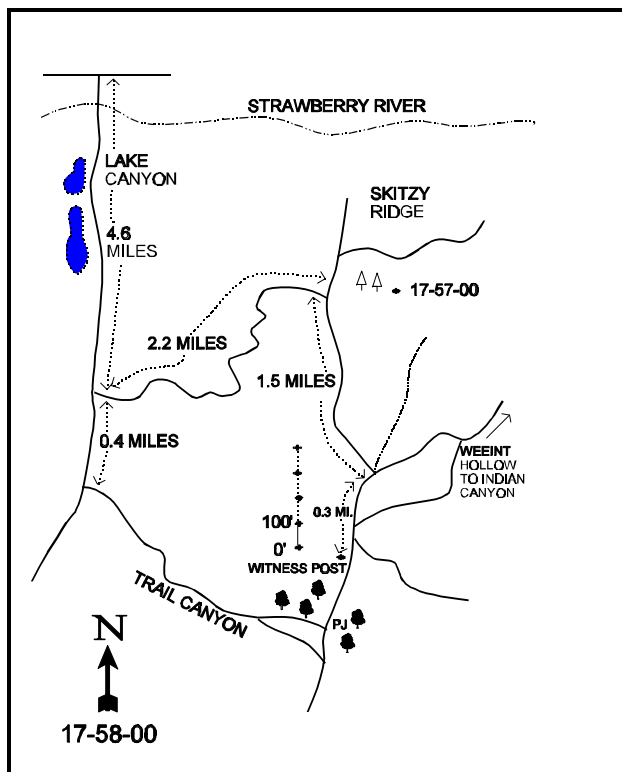
LOCATION DESCRIPTION

From the Strawberry River, take the Lake Canyon Road (3239 West) south for 4.6 miles to a road which goes up the side canyon to the east. Turn left and go up the side canyon and switchbacks for 2.2 miles to an intersection at the top of the ridge (location of study 17-57-00). Turn right and drive south 1.5 miles to an intersection. Turn right and go 0.25 miles to a fork. Bear right and proceed up the hill 0.05 miles to the witness post, a short green fencepost on the right side of the road. From the witness post, the 0-foot baseline stake is 30 paces west (290°M) down the hill.



Map Name: Buck Knoll

Township 5S, Range 6W, Section 3



Diagrammatic Sketch

UTM 4435265.976 N, 538195.019 E

DISCUSSION

Trend Study No. 17-58 (14-5)

The Buck Knoll range trend study is located on a Utah Division of Wildlife Resources chaining and seeding. It is approximately one and one-half miles southwest of study #17-57 at an elevation of 7,500 feet. This site is close (within 100 yards) to the untreated juniper-pinyon woodland edge and is on a gentle (10% to 20%) west facing slope. The area currently supports a mixed browse community with a good herbaceous understory. Pellet group data from 2000 estimated 6 deer, 26 elk and 3 cow days use/acre (15 ddu/ha, 64 edu/ha and 7 cdu/ha). Most pellet groups appear to be from winter use.

The soil is relatively shallow with an effective rooting depth estimated at nearly 13 inches. Texture is a clay loam with a slightly alkaline soil reaction (pH of 7.4). Rock and pavement are common on the surface and in the soil profile. Many of the rocks in the profile contain calcium carbonate deposits. Phosphorus within the soil is limited at 5.1 ppm. Values less than 10 ppm can limit normal plant growth and development. There is some localized soil movement but erosion is not severe. Regardless, the soil condition is still vastly better than in the nearby untreated juniper-pinyon woodland.

Browse is more abundant on this site than at Skitz Canyon (17-57), but it is still well below optimum for a deer winter range. The key management species consist of a small stand of true mountain mahogany which have numbered around 600 plants/acre since 1988. Currently ('00), mahogany provides 35% of the total shrub cover with a mostly mature population of 620 plants/acre. These shrubs are about 4 to 6 feet in height and exhibit light to moderate utilization. Vigor is good but some plants had yellowing leaves due to the very dry conditions of 2000. Use was severe in 1982 when 71% of the mahogany was heavily hedged. Use was moderate to heavy in 1995. Secondary browse which provide additional forage consist of small numbers of black sagebrush, mountain big sagebrush, rubber rabbitbrush, antelope bitterbrush and elderberry.

The herbaceous understory is dominated by a variety of grasses which combine to produce 60% of the vegetation cover in 1995 and 56% in 2000. The grass composition is similar to the Skitz Canyon site, but crested wheatgrass is not nearly as dominant. Crested wheatgrass currently ('00) provides 23% of the grass cover. Salina wildrye is also abundant and it also provides 23% of the grass cover. Intermediate wheatgrass, Russian wildrye and Indian ricegrass are also common. Forbs are diverse but not numerous. Twenty-eight species were encountered in 1995, combined they produced less than 3% cover. Only 22 forbs were sampled in 2000 and due to the dry conditions they produced less than 1% total cover. The more common species are native species like hoary aster, mat penstemon and common twinpod.

1982 APPARENT TREND ASSESSMENT

Soil condition is fair and improving as a result of increased herbaceous cover and litter accumulation since the chaining. Vegetatively, the area is dominated by grasses, but contains a small number of desirable shrubs as well as an undesirable invader, broom snakeweed. Both can be expected to increase, although probably at different rates. Broom snakeweed will likely become more abundant in the immediate future.

1988 TREND ASSESSMENT

As was the case with study 17-57, this chained site shows little sign of change since 1982. Ground cover characteristics remain basically unchanged. Browse species are more prominent on this site than at Skitz Canyon. Other than a slight increase in grass and forb frequency and shrub density, the data from the two years is very similar. Observations based on photo point comparisons suggest an increase in the size of big sagebrush and less grass production in 1988. The expected rapid increase in broom snakeweed has not occurred. The

population of true mountain mahogany is mostly comprised of young plants (78%), but density has not significantly increased in the last six years. Use of the palatable browse species (mahogany, bitterbrush and mountain big sagebrush) is light.

TREND ASSESSMENT

soil - stable (3)

browse - slightly up (4)

herbaceous understory - slightly up (4)

1995 TREND ASSESSMENT

Ground cover characteristics are similar to those in 1988. Protective ground cover is good and erosion is not a problem. Browse trend is stable but density is still well below what would be needed for a good deer winter range. The herbaceous understory displays a stable trend with sum of nested frequency being slightly down for grasses but up for forbs. Grass composition has changed. Nested frequency of crested wheatgrass, intermediate wheatgrass, smooth brome and mutton bluegrass declined significantly while nested frequency of Russian wildrye, Indian ricegrass, bottlebrush squirreltail and needle-and-thread increased.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

2000 TREND ASSESSMENT

Trend for soil is down slightly. Relative percent cover of bare ground has increased slightly while litter cover declined. In addition, the ratio of protective cover (vegetation, litter and cryptogams) to bare ground declined slightly. Sum of nested frequency of perennial grasses and forbs also decreased by 33% in 2000 due to the dry conditions. There is some localized soil movement but erosion is not a problem on the site at this time. Trend for browse is stable for the key species, true mountain mahogany. Density has remained similar to 1995, use is light to moderate and vigor normal. One positive aspect is that young recruitment has improved and numerous seedlings were sampled in 2000 (1,080 seedlings/acre). On the negative side, density of the green-stem rubber rabbitbrush, broom snakeweed and pinyon and juniper trees have increased. These less desirable shrubs and trees currently provide 45% of the browse cover. Trend for the herbaceous understory is down for grasses and forbs. Sum of nested frequency of perennial grasses has declined with a significant decline in the nested frequency of crested wheatgrass, Indian ricegrass, bottlebrush squirreltail and needle-and-thread. The only grass to increase significantly was Salina wildrye. Nested frequency of perennial forbs declined by 54% and cover dropped from 3% to less than 1%.

TREND ASSESSMENT

soil - down slightly (2)

browse - stable for mahogany (3)

herbaceous understory - down (1)

HERBACEOUS TRENDS --

Herd unit 17 , Study no: 58

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron cristatum	_b 217	_a 111	94	53	74	39	35	5.14	3.99
G	Agropyron dasystachyum	8	11	16	17	3	4	6	.42	.25
G	Agropyron intermedium	_b 48	_a 7	_a 29	16	20	3	10	.16	1.46
G	Bouteloua gracilis	-	-	-	1	-	-	-	-	-
G	Bromus inermis	_b 23	_a 3	_a 4	8	9	1	2	.03	.01
G	Carex spp.	18	24	6	14	10	9	3	.38	.21
G	Elymus cinereus	11	8	1	7	5	2	1	.41	.38
G	Elymus junceus	31	40	34	-	12	17	15	2.00	1.95
G	Elymus salina	_a 47	_a 38	_b 89	8	17	15	31	1.82	4.09
G	Oryzopsis hymenoides	_a 39	_b 89	_a 40	23	20	38	16	3.67	1.95
G	Poa fendleriana	_b 33	_a 9	_a 13	1	18	4	6	.07	.39
G	Poa pratensis	_a -	_b 14	_{ab} 7	-	-	5	2	.17	1.70
G	Poa secunda	_a -	_c 24	_b 12	-	-	11	5	.25	.07
G	Sitanion hystrix	_a 43	_b 83	_a 28	2	17	33	12	.61	.45
G	Sporobolus cryptandrus	-	3	-	-	-	1	-	.00	-
G	Stipa comata	_a 8	_b 44	_a 14	1	4	17	6	1.64	.65
G	Unknown grass - perennial	2	-	-	1	1	-	-	-	-
Total for Annual Grasses		0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		528	508	387	152	210	199	150	16.79	17.58
Total for Grasses		528	508	387	152	210	199	150	16.79	17.58
F	Agoseris glauca	-	-	-	-	-	-	-	.15	-
F	Antennaria rosea	_a -	_a -	_b 7	4	-	-	4	-	.02
F	Androsace septentrionalis (a)	-	_b 23	_a 2	-	-	10	1	.10	.00
F	Arabis drummondii	6	13	1	1	3	5	1	.02	.00
F	Arenaria fendleri	-	1	5	2	-	1	2	.00	.03
F	Astragalus argophyllus	_b 13	_b 8	_a 2	-	5	3	1	.04	.00
F	Astragalus miser	_b 35	_b 17	_a -	17	16	8	-	.24	-
F	Balsamorhiza sagittata	1	-	-	-	1	-	-	-	-
F	Caulanthus crassicaulis	-	2	-	-	-	1	-	.00	-
F	Calochortus nuttallii	-	2	-	-	-	1	-	.00	-
F	Chaenactis douglasii	_a -	_b 18	_a 3	-	-	9	1	.04	.00
F	Chenopodium fremontii (a)	-	_b 26	_a -	-	-	13	-	.11	-
F	Chamaechaenactis scaposa	6	-	-	-	2	-	-	-	-
F	Cirsium spp.	-	-	-	1	-	-	-	-	-
F	Cryptantha spp.	_b 8	_b 19	_a -	3	5	7	-	.25	-
F	Descurainia pinnata (a)	-	_b 29	_a -	-	-	16	-	.22	-

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	Eriogonum alatum	a ⁻	b ¹⁷	b ⁷	7	-	7	4	.22	.02
F	Erigeron eatonii	a ⁻	a ⁻	b ¹⁰	-	-	-	5	-	.07
F	Gilia spp. (a)	-	1	1	-	-	1	1	.00	.00
F	Hedysarum boreale	-	1	6	-	-	1	3	.03	.04
F	Hymenoxys acaulis	b ³³	ab ¹⁵	a ¹	2	13	7	1	.08	.00
F	Ipomopsis aggregata	a ⁻	b ¹²	a ¹	-	-	5	1	.02	.00
F	Lappula occidentalis (a)	-	b ⁷³	a ³	-	-	33	2	.52	.01
F	Lesquerella spp.	b ¹⁸	ab ¹²	a ³	7	9	8	2	.04	.01
F	Linum lewisii	16	14	11	33	8	7	6	.08	.10
F	Machaeranthera grindelioides	17	18	15	-	7	10	8	.32	.11
F	Melilotus officiale	-	-	-	1	-	-	-	-	-
F	Penstemon caespitosus	ab ¹³	b ³¹	a ¹⁰	-	7	12	6	.06	.10
F	Physaria acutifolia	a ⁻	b ¹⁰	b ¹⁵	-	-	4	8	.04	.04
F	Phlox spp.	b ¹¹	a ⁻	a ⁻	-	5	-	-	-	-
F	Schoenocrambe linifolia	-	4	-	2	-	2	-	.01	-
F	Senecio canus	11	4	3	-	6	2	2	.03	.01
F	Sphaeralcea coccinea	-	1	4	-	-	1	2	.00	.15
F	Taraxacum officinale	a ⁻	b ¹³	ab ³	-	-	5	2	.02	.01
F	Townsendia incana	4	-	3	-	2	-	1	-	.03
F	Tragopogon dubius	a ⁻	b ⁹	a ⁻	-	-	5	-	.02	-
F	Trifolium spp.	4	-	-	-	1	-	-	-	-
Total for Annual Forbs		0	152	6	0	0	73	4	0.96	0.01
Total for Perennial Forbs		196	241	110	81	90	111	60	1.82	0.79
Total for Forbs		196	393	116	81	90	184	64	2.79	0.81

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --

Herd unit 17 , Study no: 58

Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Artemisia nova	1	0	-	-
B	Artemisia tridentata vaseyana	2	3	.18	.76
B	Cercocarpus montanus	22	22	3.10	4.49
B	Chrysothamnus nauseosus	16	16	2.04	1.63
B	Chrysothamnus nauseosus hololeucus	1	10	.56	1.12
B	Chrysothamnus viscidiflorus lanceolatus	3	4	-	.18

Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Eriogonum corymbosum	2	1	.15	.38
B	Gutierrezia sarothrae	28	18	.53	.63
B	Juniperus osteosperma	0	6	.56	.53
B	Leptodactylon pungens	0	1	-	.03
B	Pinus edulis	0	5	1.16	3.05
B	Purshia tridentata	0	1	-	.15
Total for Browse		75	87	8.31	12.97

CANOPY COVER --

Herd unit 17 , Study no: 58

Species	Percent Cover
	'00
Cercocarpus montanus	.80
Juniperus osteosperma	1
Pinus edulis	3

BASIC COVER --

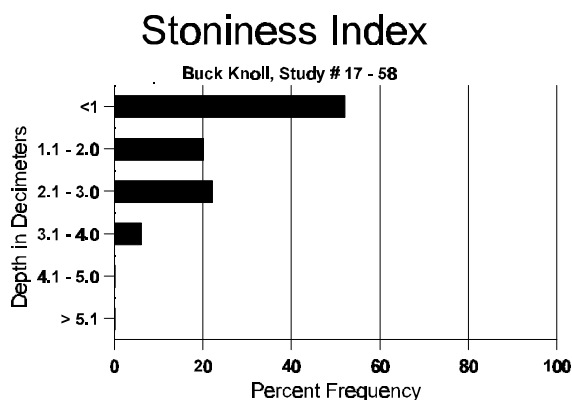
Herd unit 17 , Study no: 58

Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	327	295	8.25	8.50	25.78	33.96
Rock	198	128	2.25	2.50	7.89	2.73
Pavement	243	247	18.00	18.25	8.38	11.82
Litter	389	385	57.50	59.00	55.12	54.79
Cryptogams	11	16	0	.25	.24	.22
Bare Ground	210	219	14.00	11.50	10.93	14.94

SOIL ANALYSIS DATA --

Herd Unit 17, Study # 58, Study Name: Buck Knoll

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
12.87	57.6 (15.67)	7.4	24.9	47.8	28.3	5.3	5.1	92.8	0.9



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 58

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'95	'00	00	00
Rabbit	5	16	122	N/A
Horse	5	1	-	-
Elk	12	18	339	26 (65)
Deer	7	9	78	6 (15)
Cattle	-	-	35	3 (7)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 58

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht. Cr.		
Artemisia nova																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	-	1	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	1	-	-	-	-	-	-	-	-	1	-	-	20	11	20	1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	7	11	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>% Change</u>							
		'82			00%			00%			00%							
		'88			00%			00%			00%							
		'95			50%			00%			00%							
		'00			00%			00%			00%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	40		-			
												'00	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata vaseyana																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0	0			
	95	-	-	-	-	-	-	-	-	-	-	-	-	0	0			
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	82	-	1	-	-	-	-	-	-	-	1	-	-	-	66	12	6	1
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66	31	24	1
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40	30	46	2
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	33	46	2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		100%			00%			00%			+ 0%							
'88		00%			00%			00%			-39%							
'95		00%			00%			00%			+60%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	-			
												'88	66		-			
												'95	40		-			
												'00	100		-			
Cercocarpus montanus																		
S	82	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	54	-	-	-	-	-	-	-	-	54	-	-	-	1080			54
Y	82	-	2	3	-	-	-	-	-	-	5	-	-	-	333		5	
	88	7	-	-	-	-	-	-	-	-	7	-	-	-	466			7
	95	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	00	6	1	-	-	-	-	-	-	-	7	-	-	-	140			7
M	82	-	-	1	-	-	-	-	-	-	1	-	-	-	66	25	33	1
	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133	44	53	2
	95	2	18	5	-	-	-	-	-	-	25	-	-	-	500	47	49	25
	00	4	7	-	10	3	-	-	-	-	18	6	-	-	480	45	47	24
D	82	-	-	1	-	-	-	-	-	-	-	-	1	-	66		1	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		29%			71%			14%			+22%							
'88		00%			00%			00%			- 3%							
'95		62%			17%			00%			+ 6%							
'00		35%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	465	Dec:	14%			
												'88	599		0%			
												'95	580		0%			
												'00	620		0%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus nauseosus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	00	18	-	-	-	-	-	-	-	-	18	-	-	-	360		18	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	26	12	-	-	-	-	-	-	-	38	-	-	-	760	31	38	
	00	29	-	-	-	-	-	-	-	-	29	-	-	-	580	23	29	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	13	-	-	-	-	-	-	-	-	7	-	-	6	260		13	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		31%			00%			00%			+35%							
'00		00%			00%			10%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	0		0%			
												'95	780		0%			
												'00	1200		22%			
Chrysothamnus nauseosus hololeucus																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	15	-	-	-	-	-	-	-	-	15	-	-	-	300		15	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20	28	1	
	00	31	-	-	-	-	-	-	-	-	31	-	-	-	620	4	31	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%			+98%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	0		0%			
												'95	20		0%			
												'00	940		2%			

A Y G R E	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3		4		
Chrysothamnus viscidiflorus lanceolatus																	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	1	-	-	-	-	-	-	-	-	-	1	-	-	20		1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	88	1	-	-	1	-	-	-	-	-	-	2	-	-	133	6	2
	95	5	-	-	-	-	-	-	-	-	-	5	-	-	100	10	5
	00	8	1	-	-	-	-	-	-	-	-	9	-	-	180	12	9
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>			
'82		00%				00%				00%							
'88		00%				00%				00%				-10%			
'95		00%				00%				00%				+33%			
'00		11%				00%				00%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-		
												'88	133		-		
												'95	120		-		
												'00	180		-		
Ephedra viridis																	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21	0
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>			
'82		00%				00%				00%							
'88		00%				00%				00%							
'95		00%				00%				00%							
'00		00%				00%				00%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-		
												'88	0		-		
												'95	0		-		
												'00	0		-		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Eriogonum corymbosum																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	2	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	1	-	-	-	-	-	-	-	-	-	-	-	-	20	16	21	
	00	-	2	-	-	-	-	-	-	-	-	-	-	-	40	15	20	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%			-33%							
'00		100%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	60		-			
												'00	40		-			
Gutierrezia sarothrae																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	14	-	-	-	-	-	-	-	-	-	-	-	-	280		14	
	00	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	39	-	-	-	-	-	-	-	-	-	-	-	-	780		39	
	00	10	-	-	-	-	-	-	-	-	-	-	-	-	200		10	
M	82	9	-	-	-	-	-	-	-	-	-	-	-	-	600	11	19	
	88	30	-	-	-	-	-	-	-	-	-	-	-	-	2000	7	4	
	95	51	-	-	-	-	-	-	-	-	-	-	-	-	1020	8	8	
	00	128	-	-	-	-	-	-	-	-	-	-	-	-	2560	5	4	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	5	-	-	-	-	-	-	-	-	-	-	-	-	333		5	
	95	1	-	-	-	-	-	-	-	-	-	-	1	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+74%							
'88		00%			00%			00%			-22%							
'95		00%			00%			01%			+34%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	600	Dec:	0%			
												'88	2333		14%			
												'95	1820		1%			
												'00	2760		0%			

A Y G R E	Form Class (No. of Plants)	Vigor Class									Plants Per Acre	Average (inches) Ht. Cr.	Total					
		1	2	3	4	5	6	7	8	9				1	2	3	4	
Juniperus osteosperma																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	5	-	-	-	-	-	-	-	-	-	5	-	-	-	100	-	5
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	1	-	-	-	-	-	-	1	-	-	-	20	-	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	120		-			
Leptodactylon pungens																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	1	-	-	-	-	-	-	-	-	1	-	-	-	20	5	7
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		100%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	20		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Pinus edulis																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	-	-	-	-	-	-	-	-	-	2	-	-	-	40		2
Y	82	1	-	-	-	-	-	-	-	-	-	-	1	-	66		1	
	88	-	-	-	-	-	-	1	-	-	-	1	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	-	-	-	-	-	1	-	-	-	3	-	-	-	60		3
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	00	2	-	-	1	-	-	-	-	-	-	3	-	-	-	60	-	3
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			100%			+ 0%							
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	-			
												'88	66		-			
												'95	0		-			
												'00	120		-			
Purshia tridentata																		
Y	82	1	-	-	-	-	-	-	-	-	-	1	-	-	-	66		1
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	-	1	-	-	-	-	-	-	-	-	1	-	-	66	8	6	1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	00	-	-	-	-	1	-	-	-	-	-	1	-	-	-	20	42	23
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+ 0%							
'88		100%			00%			00%										
'95		00%			00%			00%										
'00		100%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	-			
												'88	66		-			
												'95	0		-			
												'00	20		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Sambucus cerulea																		
M	'82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	'88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	'95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	61	64	0
	'00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	46	53	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'82			00%			00%			00%							
		'88			00%			00%			00%							
		'95			00%			00%			00%							
		'00			00%			00%			00%							
Total Plants/Acre (excluding Dead & Seedlings)												'82		0	Dec:	-		
												'88		0		-		
												'95		0		-		
												'00		0		-		

Trend Study 17-59-00

Study site name: Emma Park .

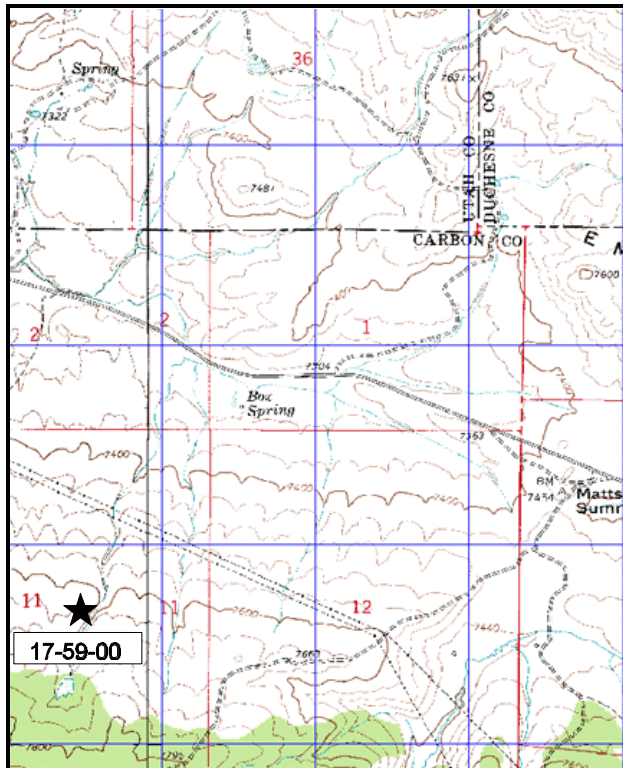
Range type: Big Sagebrush .

Compass bearing: frequency baseline 186°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

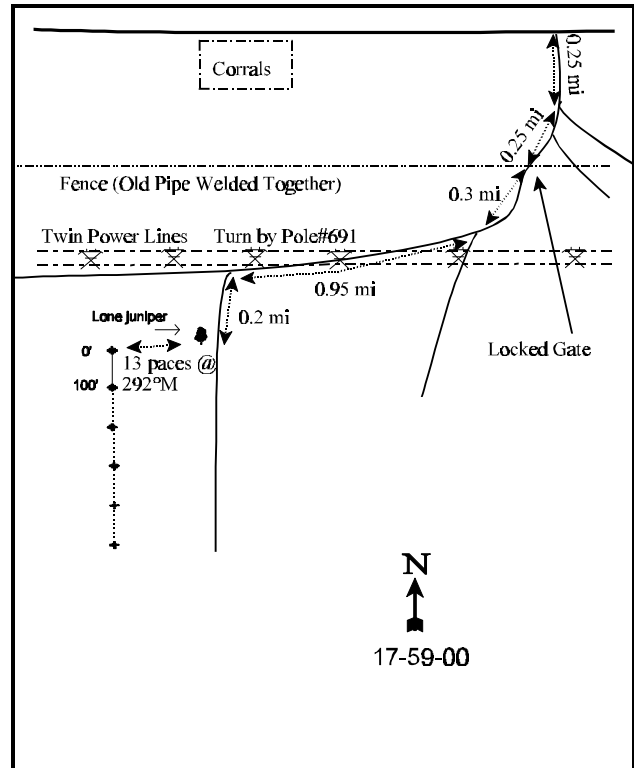
LOCATION DESCRIPTION

Traveling south on Highway 6 take a left on the road that leads to Kyune and travel 5.75 miles. Turn right and go 0.25 miles. Veer right for 0.15 miles to a fork. Continue right for 0.1 miles to a locked gate. Go through the gate for 0.3 miles. Veer right and go 0.95 miles following the power lines. Turn left for 0.2 miles to a high lined juniper. The 0 foot stake is 13 paces away @ 292°M.



Map Name: Kyune

Township 12S , Range 9E , Section 11



Diagrammatic Sketch

UTM. 4405280.754 N, 510327.007 E

DISCUSSION

Trend Study No. 17-59 (32-19)

The Emma Park study site was established in 1994 and was selected because of the perceived increase of winter use by elk in the area. It is located on one of the many moderately north sloping ridges in the area that drain into Horse Creek, which in turn drains southwest into the Price River. The elevation of the site is about 7,400 feet. The site is located within the sagebrush-grass type. Species diversity is very high with 56 species found on the inventoried transects. Deer appear to be using this area as transitional and summer range. Deer were seen on site during the 2000 reading. Quadrat frequency of elk and deer pellet groups was fairly high in 1994 at 25% and 19% respectively. Perhaps due to the mild winter of 1999-2000, quadrat frequency of elk and deer pellet groups dropped to 6% and 8%. A pellet group transect read along the study site baseline in 2000 estimates 13 elk, 15 deer and 20 cow days use/acre (32 edu/ha, 37 ddu/ha and 50 cdu/ha). Cattle use the area during the summer as part of the Price Canyon East allotment which is used by 108 cattle from May 17 to November 15. Rabbit pellets were also common.

Soil on the site is moderately deep with an effective rooting depth estimated at just over 14 inches. The soil has a clay loam texture and a neutral soil reaction (pH of 7.0). Small rocks are common on the surface and within the profile in some areas, but the soil is deeper and relatively rock free in areas where soil has accumulated over time. Rocky areas support far fewer and smaller shrubs, while the deeper soil along the end of the baseline supports very large and robust sagebrush. There is little current evidence of erosion, but historically the area exhibits signs of heavy soil loss.

Nine species of shrubs were sampled on the site in 2000. Mountain big sagebrush is the dominant shrub with a density of 4,640 plants/acre in 1994 and 4,600 in 2000. It provides an average of 72% of the total browse cover with a cover value of 22% in 1994 and 19% in 2000. In areas with deeper soil, some of the sagebrush appears to be basin big sagebrush (*Artemisia tridentata tridentata*). These plants are very tall and robust with a height of 5 feet and a crown of nearly 4 feet. Most of the sagebrush sampled are considered to be mountain big sagebrush (*Artemisia tridentata vaseyana*) although there appears to be some hybridizing between the two subspecies. Use of the sagebrush is mostly light and vigor good. Percent decadence is low and reproduction good. The high cover of sagebrush combined with grazing pressure appears to be suppressing the herbaceous understory to some extent. At this elevation, open areas should produce much more abundant grass and forb cover.

Other desirable shrubs include some moderate to heavy browsed serviceberry and a few scattered heavily hedged bitterbrush. Stickyleaf low rabbitbrush and Oregon grape are abundant understory shrubs. They are unutilized and appear to have stable, mostly mature populations.

The herbaceous understory is moderately abundant and diverse. It contributed 34% of the total vegetative cover in 1994 and 43% in 2000. More than half of this cover is made up by forbs. The herbaceous species could provide good transition range forage in the fall and spring. Salina wildrye, thickspike wheatgrass, Letterman needlegrass, Kentucky bluegrass and mutton bluegrass are all fairly abundant. It appears that most of the thickspike was misidentified as Salina wildrye in 1994 and Kentucky bluegrass was misidentified as mutton bluegrass. Kentucky bluegrass appeared to be heavily utilized in 2000.

Forbs are diverse with several preferred species sampled. The most common species is desert phlox which provided 46% of the forb cover in 2000. Looseleaf milkvetch and lobeleaf groundsel are also abundant.

1994 APPARENT TREND ASSESSMENT

The soil appears stable because of excellent vegetative cover, good litter cover and a low percentage of bare ground. The browse also appears stable with good vigor and productivity. The herbaceous understory is abundant and diverse with good species diversity and excellent cover values.

2000 TREND ASSESSMENT

Trend for soil is stable with abundant vegetation and litter cover to provide adequate protection from erosion. Trend for the key browse, mountain big sagebrush is also stable. Population density is not changed but the number of decadent plants has declined. Use is mostly light to moderate, vigor is good and reproduction adequate to maintain the stand. Trend for the herbaceous understory is up slightly due to an increase in the sum of nested frequency of grasses and forbs. A reduction in sagebrush cover would further increase production of the herbaceous understory.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - up slightly (4)

HERBACEOUS TRENDS --

Herd unit 17 , Study no: 59

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'94	'00	'94	'00	'94	'00
G	Agropyron dasystachyum	8	*101	4	35	.21	1.11
G	Bromus anomalus	6	7	2	3	.01	.04
G	Bromus tectorum (a)	3	9	1	3	.00	.09
G	Carex spp.	9	*46	3	18	.18	.72
G	Elymus salina	242	*86	74	26	5.72	2.36
G	Koeleria cristata	-	1	-	1	-	.03
G	Poa fendleriana	132	*85	45	29	.90	1.50
G	Poa secunda	-	12	-	4	-	.07
G	Poa pratensis	-	*111	-	31	-	2.58
G	Stipa lettermani	32	*70	12	32	.28	1.19
Total for Annual Grasses		3	9	1	3	0.00	0.08
Total for Perennial Grasses		429	519	140	179	7.31	9.63
Total for Grasses		432	528	141	182	7.32	9.72
F	Achillea millefolium	34	*61	14	24	.17	.73
F	Antennaria parvifolia	3	*23	2	10	.06	.32
F	Androsace septentrionalis (a)	2	6	1	3	.00	.01
F	Arabis drummondi	12	*3	6	1	.03	.00
F	Aster chilensis	33	*15	9	5	.14	.19

T y p e	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'94	'00	'94	'00	'94	'00
F	<i>Astragalus convallarius</i>	25	*5	14	3	.26	.07
F	<i>Astragalus tenellus</i>	60	77	28	33	1.14	.57
F	<i>Astragalus</i> spp.	9	-	3	-	.06	-
F	<i>Astragalus utahensis</i>	-	*6	-	4	-	.07
F	<i>Castilleja linariaefolia</i>	7	3	3	1	.16	.00
F	<i>Calochortus nuttallii</i>	3	-	1	-	.00	-
F	<i>Chenopodium album</i> (a)	1	-	1	-	.00	-
F	<i>Chaenactis douglasii</i>	7	6	3	5	.01	.05
F	<i>Cirsium</i> spp.	-	2	-	1	-	.00
F	<i>Comandra pallida</i>	14	*39	6	16	.03	.25
F	<i>Collinsia parviflora</i> (a)	44	*-	19	-	.19	-
F	<i>Crepis acuminata</i>	3	-	2	-	.41	-
F	<i>Erigeron eatonii</i>	65	*34	26	13	.42	.14
F	<i>Erigeron flagellaris</i>	1	4	1	2	.00	.01
F	<i>Eriogonum umbellatum</i>	3	4	1	2	.03	.06
F	<i>Gayophytum ramosissimum</i> (a)	3	2	1	1	.00	.00
F	<i>Gilia</i> spp. (a)	2	-	2	-	.01	-
F	<i>Hedysarum boreale</i>	-	3	-	1	-	.03
F	<i>Helianthella uniflora</i>	1	24	1	10	.00	.37
F	<i>Ipomopsis aggregata</i>	-	2	-	1	-	.00
F	<i>Lomatium</i> spp.	-	2	-	1	-	.00
F	<i>Lupinus argenteus</i>	35	35	14	17	.21	.59
F	<i>Lychnis drummondii</i>	1	6	1	2	.00	.41
F	<i>Machaeranthera canescens</i>	5	-	3	-	.01	-
F	<i>Orthocarpus</i> spp. (a)	-	1	-	1	-	.00
F	<i>Penstemon caespitosus</i>	13	24	5	9	.07	.19
F	<i>Penstemon humilis</i>	11	13	5	4	.10	.04
F	<i>Penstemon watsonii</i>	23	19	9	10	.41	.20
F	<i>Phlox austromontana</i>	142	156	43	49	3.72	5.16
F	<i>Phlox longifolia</i>	3	1	1	1	.00	.00
F	<i>Polygonum douglasii</i> (a)	10	-	5	-	.02	-
F	<i>Potentilla gracilis</i>	4	*11	2	7	.01	.08
F	<i>Schoenocrambe linifolia</i>	2	2	1	2	.00	.01
F	<i>Senecio integerrimus</i>	9	8	5	4	.03	.07
F	<i>Senecio multilobatus</i>	15	*103	8	43	.04	1.37

T y p e	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'94	'00	'94	'00	'94	'00
F	Sphaeralcea coccinea	3	-	1	-	.00	-
F	Taraxacum officinale	6	*31	3	11	.01	.18
F	Thalictrum fendleri	3	8	2	3	.06	.06
F	Zigadenus paniculatus	1	-	1	-	.00	-
Total for Annual Forbs		62	9	29	5	0.24	0.02
Total for Perennial Forbs		556	730	224	295	7.70	11.31
Total for Forbs		618	739	253	300	7.94	11.34

* Indicates significant difference at % = 0.10

BROWSE TRENDS --

Herd unit 17 , Study no: 59

T y p e	Species	Strip Frequency		Average Cover %	
		'94	'00	'94	'00
B	Amelanchier utahensis	9	8	.18	.33
B	Artemisia tridentata tridentata	0	3	-	.68
B	Artemisia tridentata vaseyana	88	93	21.89	19.21
B	Cercocarpus montanus	1	0	.03	-
B	Chrysothamnus depressus	4	8	.19	.27
B	Chrysothamnus viscidiflorus viscidiflorus	74	64	3.73	4.61
B	Gutierrezia sarothrae	3	4	.00	.03
B	Mahonia repens	22	23	.65	1.06
B	Purshia tridentata	0	1	-	-
B	Ribes spp.	0	1	-	-
B	Rosa woodsii	3	3	.00	.03
B	Symphoricarpos oreophilus	28	24	2.66	2.14
B	Tetradymia canescens	1	2	-	.00
Total for Browse		233	234	29.34	28.37

BASIC COVER --

Herd unit 17 , Study no: 59

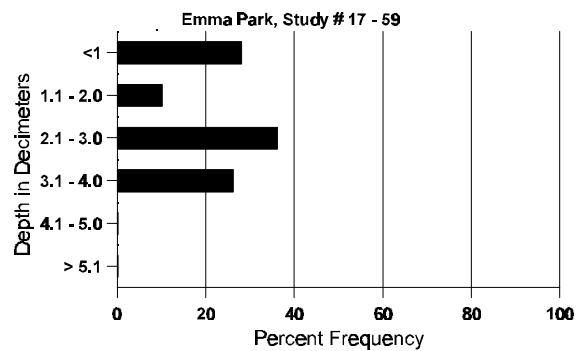
Cover Type	Nested Frequency		Average Cover %	
	'94	'00	'94	'00
Vegetation	413	430	43.04	50.81
Rock	212	134	5.51	6.91
Pavement	143	206	1.48	7.57
Litter	481	469	47.61	59.09
Cryptogams	66	30	.60	1.20
Bare Ground	303	230	14.02	18.48

SOIL ANALYSIS DATA --

Herd Unit 17, Study # 59, Study Name: Emma Park

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
14.44	49.2 (14.88)	7.0	29.4	31.1	39.3	4.0	10.6	137.6	0.8

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 59

Type	Quadrat Frequency		Pellet Transect	
	'94	'00	Pellet Groups per Acre 00	Days Use per Acre (ha) 00
Rabbit	16	24	292	N/A
Moose	2	-	-	-
Elk	25	6	165	13 (31)
Deer	19	8	191	15 (36)
Cattle	6	2	244	20 (50)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 59

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Amelanchier utahensis																		
Y	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	2	3	-	-	-	-	-	-	-	4	-	1	-	100			
M	94	3	-	3	1	-	-	-	-	-	5	-	1	1	140	16	11	7
	00	-	1	-	1	-	1	1	-	-	3	-	1	-	80	15	17	4
D	94	-	-	-	-	1	1	-	-	-	2	-	-	-	40			2
	00	1	-	-	-	-	-	-	-	-	-	-	-	1	20			
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		10%			40%			20%			+ 0%							
'00		40%			10%			30%										
Total Plants/Acre (excluding Dead & Seedlings)														'94	200	Dec:	20%	
														'00	200		10%	
Artemisia tridentata tridentata																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	2	-	-	-	-	-	-	1	-	3	-	-	-	60	61	45	3
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)														'94	0	Dec:	-	
														'00	60		-	

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata vaseyana																		
S	94	-	-	-	1	-	-	-	-	-	1	-	-	-	40		2	
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
Y	94	24	-	-	2	-	-	-	-	-	26	-	-	-	520		26	
	00	39	-	-	-	-	-	-	-	-	39	-	-	-	780		39	
M	94	129	16	-	4	-	-	-	-	-	148	1	-	-	2980	28 34	149	
	00	118	34	-	13	-	-	-	-	-	165	-	-	-	3300	28 35	165	
D	94	51	2	3	1	-	-	-	-	-	42	3	-	12	1140		57	
	00	21	5	-	-	-	-	-	-	-	16	-	-	10	520		26	
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	720		36	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	580		29	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		08%			01%			05%			- 1%							
'00		17%			00%			04%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	4640	Dec:	25%			
												'00	4600		11%			
Cercocarpus montanus																		
M	94	-	1	-	-	-	-	-	-	-	-	-	-	1	20	9 12	1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		100%			00%			100%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	20	Dec:	-			
												'00	0		-			
Chrysothamnus depressus																		
M	94	5	1	-	3	-	-	-	-	-	9	-	-	-	180	4 10	9	
	00	14	1	-	-	-	-	-	-	-	15	-	-	-	300	3 7	15	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		11%			00%			00%			+40%							
'00		07%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	180	Dec:	-			
												'00	300		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus viscidiflorus viscidiflorus																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	5	-	-	2	-	-	-	-	-	7	-	-	-	140		7	
M	94	198	-	-	31	-	-	9	-	-	237	-	-	1	4760	11	13	
	00	166	1	-	16	-	-	3	-	-	186	-	-	-	3720	9	13	
D	94	1	-	-	1	-	-	-	-	-	1	-	-	1	40		2	
	00	7	-	-	-	-	-	-	-	-	6	-	-	1	140		7	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		00%			00%			.83%			-17%							
'00		.50%			00%			.50%										
Total Plants/Acre (excluding Dead & Seedlings)														'94	4800	Dec:	1%	
														'00	4000		4%	
Gutierrezia sarothrae																		
Y	94	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	94	4	-	-	-	-	-	-	-	-	4	-	-	-	80	6	9	
	00	12	-	-	-	-	-	-	-	-	12	-	-	-	240	4	7	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		00%			00%			00%			+50%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)														'94	120	Dec:	-	
														'00	240		-	
Mahonia repens																		
Y	94	27	-	-	8	-	-	-	-	-	35	-	-	-	700		35	
	00	48	-	-	1	-	-	-	-	-	49	-	-	-	980		49	
M	94	167	-	-	11	-	-	-	-	-	178	-	-	-	3560	3	4	
	00	205	-	-	24	-	-	41	-	-	270	-	-	-	5400	3	4	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		00%			00%			00%			+33%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)														'94	4260	Dec:	-	
														'00	6380		-	

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Purshia tridentata																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	17	30	
	00	-	-	2	-	-	-	-	-	-	2	-	-	-	40	20	50	
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		00%			00%			00%										
'00		00%			100%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	0	Dec:	-			
												'00	40		-			
Ribes spp.																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			
	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20			
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	0	Dec:	-			
												'00	20		-			
Rosa woodsii																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			
M	94	5	-	-	2	-	-	-	-	-	7	-	-	-	140	7	7	
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	19	8	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		00%			00%			00%			-43%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	140	Dec:	-			
												'00	80		-			
Symphoricarpos oreophilus																		
Y	94	-	-	-	6	-	-	-	-	-	6	-	-	-	120			
	00	8	-	-	1	-	-	-	-	-	8	-	1	-	180			
M	94	48	3	1	10	-	-	2	-	-	64	-	-	-	1280	18	25	
	00	18	1	-	18	-	-	-	-	-	37	-	-	-	740	15	17	
D	94	-	1	-	-	-	-	-	-	-	1	-	-	-	20			
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		06%			01%			00%			-35%							
'00		02%			00%			02%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	1420	Dec:	1%			
												'00	920		0%			

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Tetradymia canescens																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	4	4	
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	
D	94	-	2	-	-	-	-	-	-	-	-	-	-	2	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		100%			00%			100%			+50%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)													'94	40	Dec:	100%		
													'00	80		0%		

SUMMARY

DEER HERD UNIT - 17 (13 & 14) - WASATCH MOUNTAINS

The portion of Wildlife Management Unit 17 read in 2000 contains the old deer herd units 13 - Currant Creek and 14 - Avintaquin. There are a total of 12 trend studies, 6 from the Currant Creek portion and 5 from the Avintaquin. One trend study was established at Emma Park which is on the south end of Unit 17 just north of U.S.-6. All trend studies in the Currant Creek and Avintaquin units were established in 1982 and reread in 1988, 1995 and 2000. In 2000, two studies, Blacktail Ridge (17-48) and Sam's Canyon (17-56) were not read because access roads were impassible for trucks.

The Currant Creek trend studies read in 2000 sample winter ranges, 4 Wyoming big sagebrush sites at Grey Wolf Mountain (17-49), Lower Santaquin Draw (17-50), Santaquin's Cabin (17-51) and Two Bar Ranch (17-53) and one mountain big sagebrush area at Cutoff (17-52). Browse trends are stable on all sites. Herbaceous trends are slightly down at Grey Wolf Mountain, Santaquin's Cabin and Cutoff.

The Avintaquin trend studies read in 2000 sample 4 winter range sites. One trend study samples a pinyon-juniper site at Peatross Ranch (17-54). There are two trend studies on pinyon-juniper chainings at Skitzzy Canyon (17-57) and Buck Knoll (17-58) and one study on a mountain brush site at Lower Horse Ridge (17-55). Browse trends are stable on all sites except for Skitzzy Canyon which displays a slightly upward browse trend. Browse are still in low numbers on this chaining but they are increasing. Herbaceous trends are stable at Peatross Ranch and Skitzzy Canyon but slightly down at Lower Horse Ridge and down at Buck Knoll.

TREND SUMMARY

	Category	1982	1988	1995	2000
Blacktail Ridge 17-48	soil	est	5	3	NR
	browse	est	1	4	NR
	herbaceous understory	est	5	2	NR
Grey Wolf Mountain 17-49	soil	est	3	3	4
	browse	est	5	3	3
	herbaceous understory	est	4	4	2
Lower Santaquin Draw 17-50	soil	est	3	4	3
	browse	est	3	4	3
	herbaceous understory	est	5	4	3
Santaquin's Cabin 17-51	soil	est	2	4	3
	browse	est	2	3	3
	herbaceous understory	est	3	4	2
Cutoff 17-52	soil	est	3	4	3
	browse	est	2	3	3
	herbaceous understory	est	4	4	2

(1) = down, (2) = slightly down, (3) = stable, (4) = slightly up, (5) = up
 est = site established, NA = data not available, NR = site not read

	Category	1982	1988	1995	2000
Two Bar Ranch 17-53	soil	est	1	5	2
	browse	est	5	3	3
	herbaceous understory	est	3	4	3
Peatross Ranch 17-54	soil	est	2	4	3
	browse	est	4	3	3
	herbaceous understory	est	4	1	3
Lower Horse Ridge 17-55	soil	est	4	3	3
	browse	est	5	3	3
	herbaceous understory	est	5	3	2
Sam's Canyon 17-56	soil	est	3	3	NR
	browse	est	3	5	NR
	herbaceous understory	est	3	3	NR
Skitzy Canyon 17-57	soil	est	2	4	3
	browse	est	4	4	4
	herbaceous understory	est	4	3	3
Buck Knoll 17-58	soil	est	3	3	2
	browse	est	4	3	3
	herbaceous understory	est	4	3	1
Emma Park 17-59	soil			est	3
	browse			est	3
	herbaceous understory			est	4

(1) = down, (2) = slightly down, (3) = stable, (4) = slightly up, (5) = up
 est = site established, NA = data not available, NR = site not read